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*We reserve the right to change the information in this manual without prior notice.

PLC1

Delta DOP-100 New Functions Operating Instruction Manual

Delta DOP-100 New Functions Operating Instruction Manual

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DOP-100 New Functions

This chapter provides detailed descriptions for the new functions of the DOPSoft 4.00.

1. Window taskbar ····· 2
2. Address Conversion ····· 8
3. Lock element (pin) ····· 8
4. Find ····· 9
5. Screen Map ····· 12
6. Monitor IO ····· 15
7. Multiple actions ····· 20
8. Meter (1) / Meter (2) / Meter (3) / Meter (4) ····· 40
9. Unit Conversion Settings ····· 58
10. Animated Graphic ····· 69
11. Operation Log Table ····· 71
12. Alarm Settings ····· 88
    12.1 Alarm History Table ····· 119
    12.2 Active Alarm List ····· 136
    12.3 Alarm Frequency Table ····· 151
    12.4 Alarm Moving Sign ····· 166
13. Keypad ····· 177
14. PDF View ····· 179
15. Enhanced Recipe ····· 193
16. Macro ····· 211
17. Multi-language Input ····· 214
18. Animated Boot Screen ····· 218
19. NTP ····· 219
20. Network application ····· 220
21. SMTP ····· 223
22. FTP ····· 227
23. Multi-Lang input character count calculation ····· 232

PLC1

1. Window taskbar

The editing window of the DOPSoft has eight sections, which include a function list, toolbars, element windows (element list and element library), a property window, an output window, a screen management window, a screen editing window, and a status bar as shown in Figure 1.1.

The toolbars are standard Windows® programs so they work the same ways as that in Windows®. They are customizable; for example, the element toolbar can be moved to the left side of the screen. You can drag the toolbars to the position based on your preference as shown in Figure 1.2.

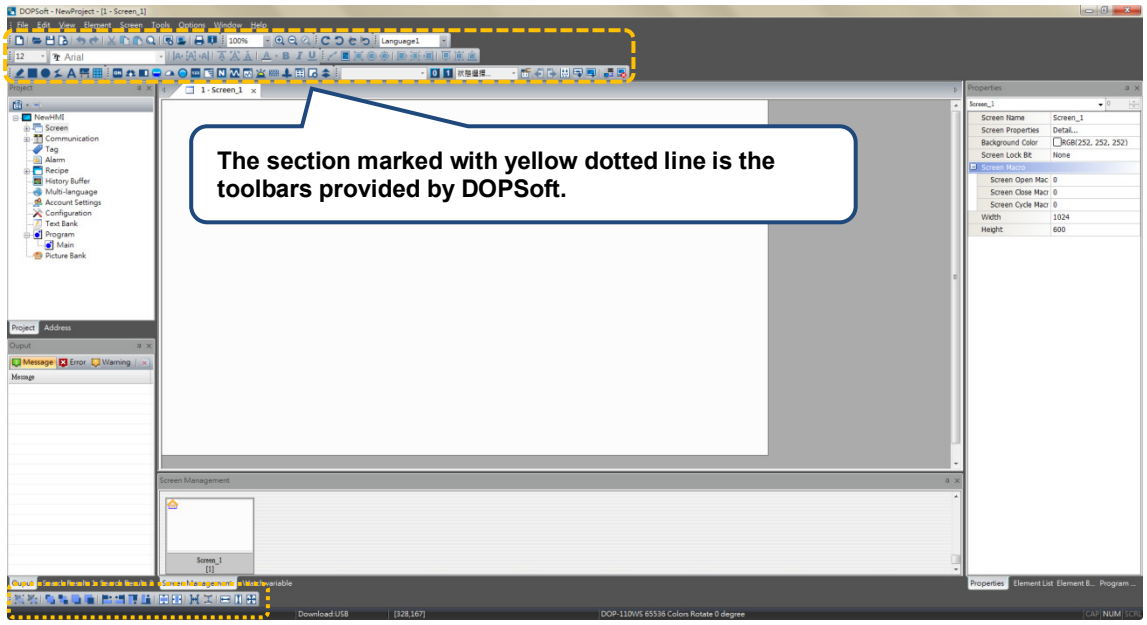


Figure 1.1 DOPSoft toolbars

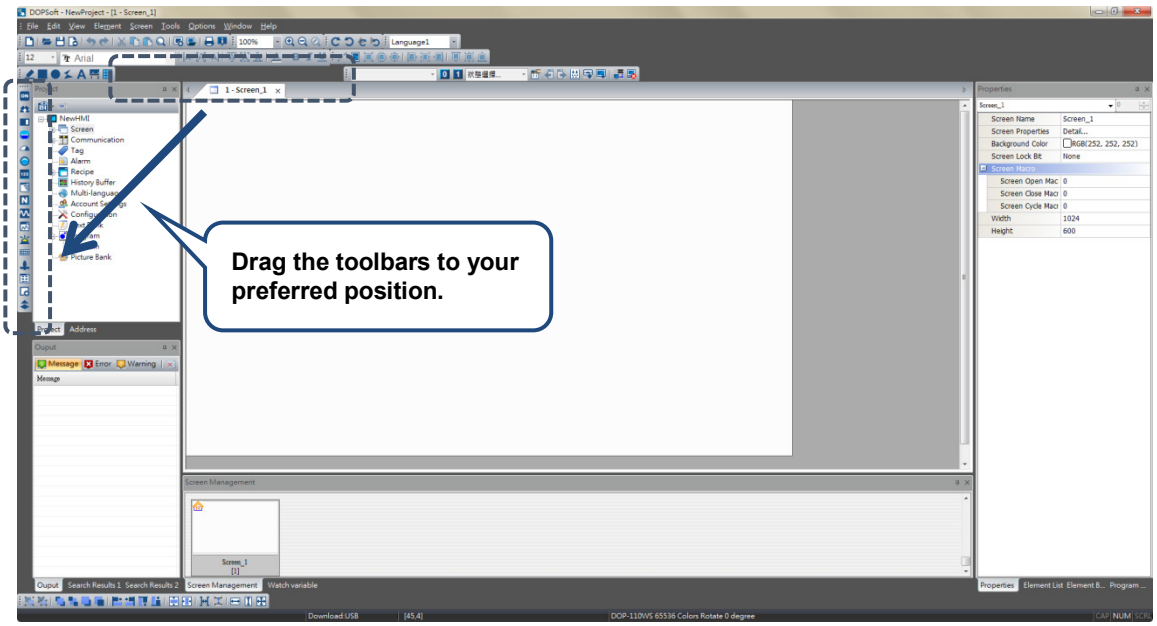
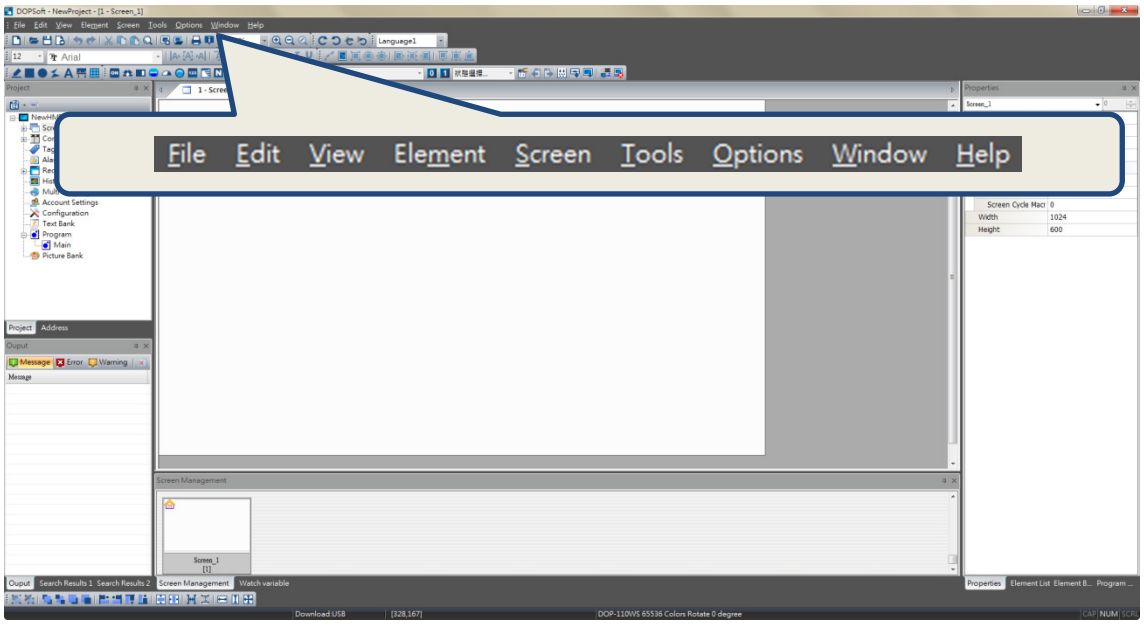


Figure 1.2 DOPSoft draggable toolbar

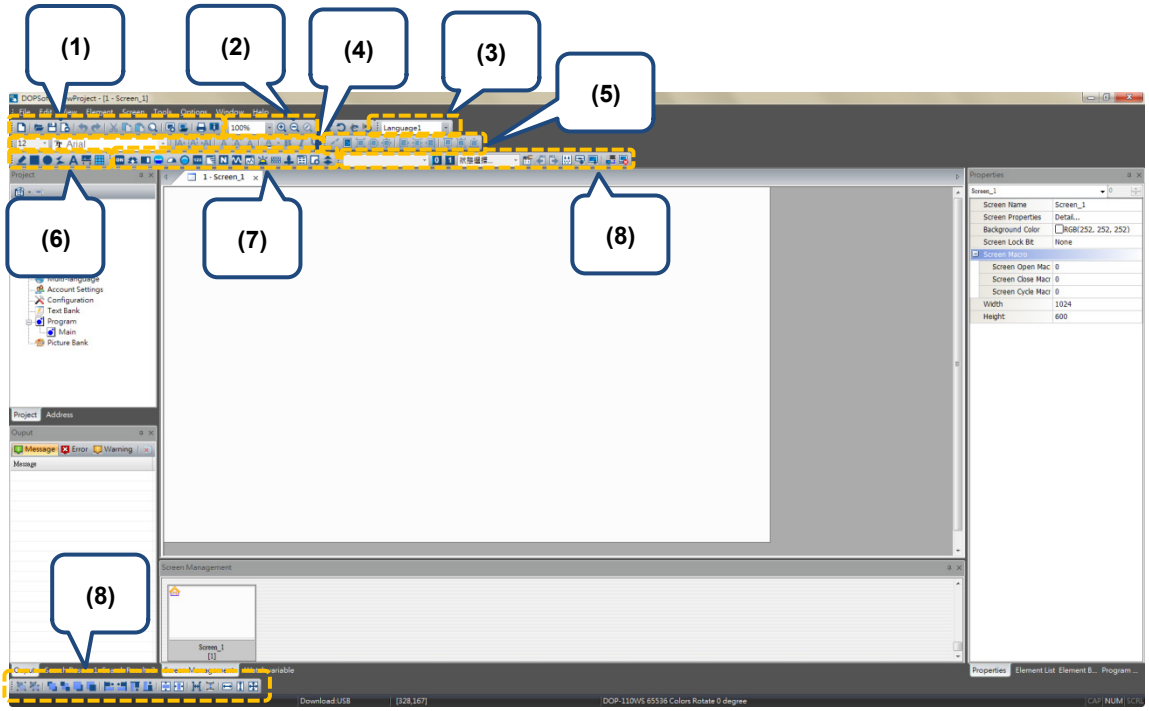
■ Function list

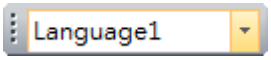
As shown in the following figure, DOPSoft provides nine function categories.



■ Toolbar

DOPSoft provides 8 toolbars.



(1) General toolbar	
(2) Zoom in / out toolbar	
(3) Language selection bar	
(4) Text toolbar	
(5) Picture toolbar	
(6) Drawing toolbar	
(7) Element toolbar	
(8) Layout toolbar	

■ Output window

This window records users' editing operations and output messages after the screen data compilation. When you execute the compile function, DOPSoft starts compiling the data; when the compilation completes, you can find the filter that enables you to promptly check errors and warning messages. The [Message] tab displays all compiling records; the [Error] tab displays the error message only; the [Warning] tab displays the warning messages only (see Figure 1.3). By clicking on the error message, you are automatically directed to the screen where the error element is located.

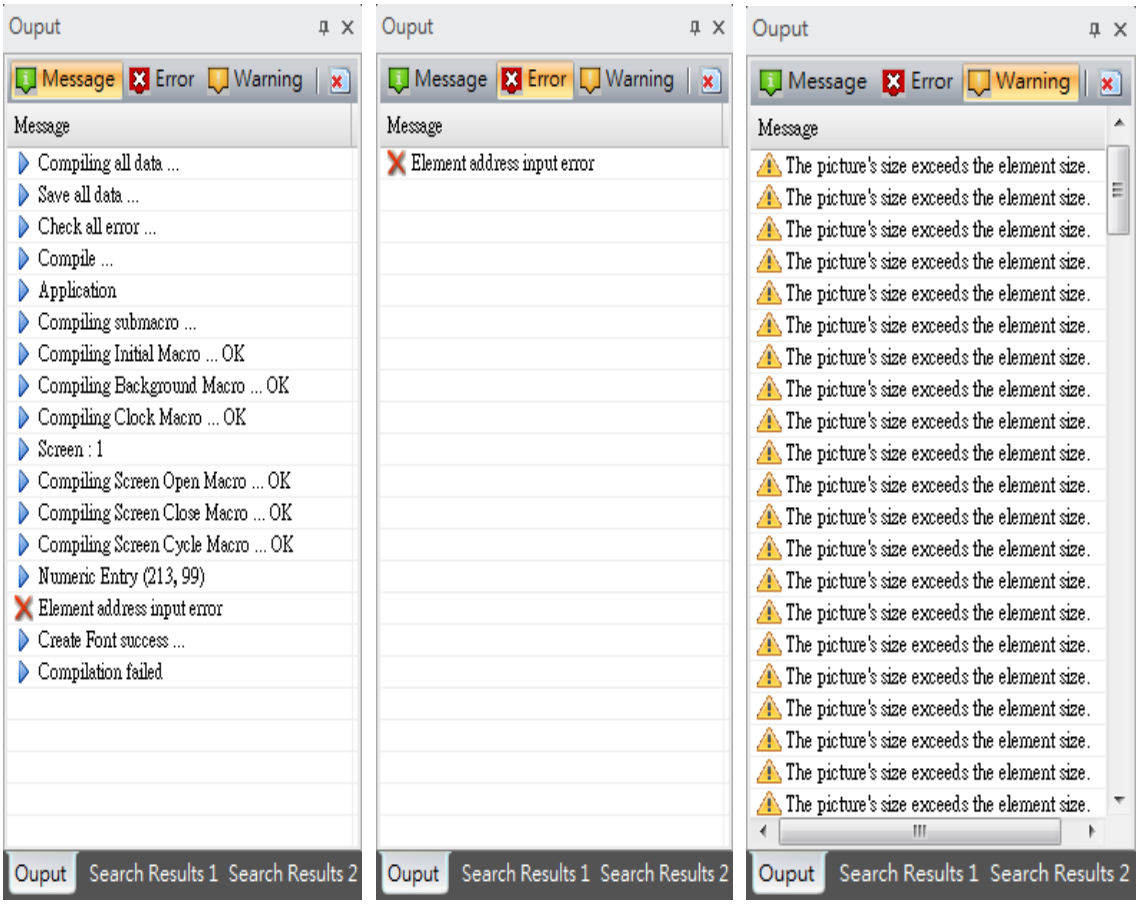


Figure 1.3 Output window

■ Project window

The project window has two tabs, [Project] and [Address].

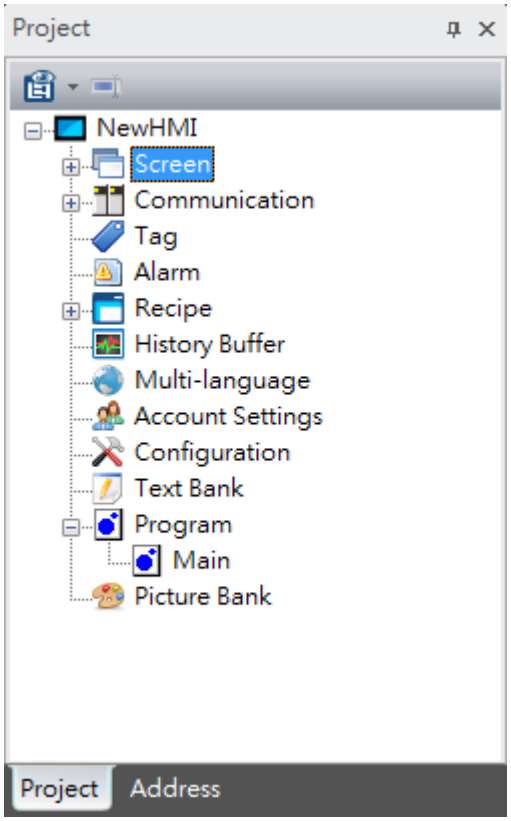


Figure 1.4 Project window

[Project] displays the frequently used functions in the option toolbar. You can double-click the project window to open the editing window.

[Address] displays the register addresses used by the editing screens. Apart from the memory addresses used by the screen elements, the address list shows all the addresses used for the control section, status section, alarms, recipes, history in the global setting.

Note: the external PLC address display is currently only available on Delta PLCs.

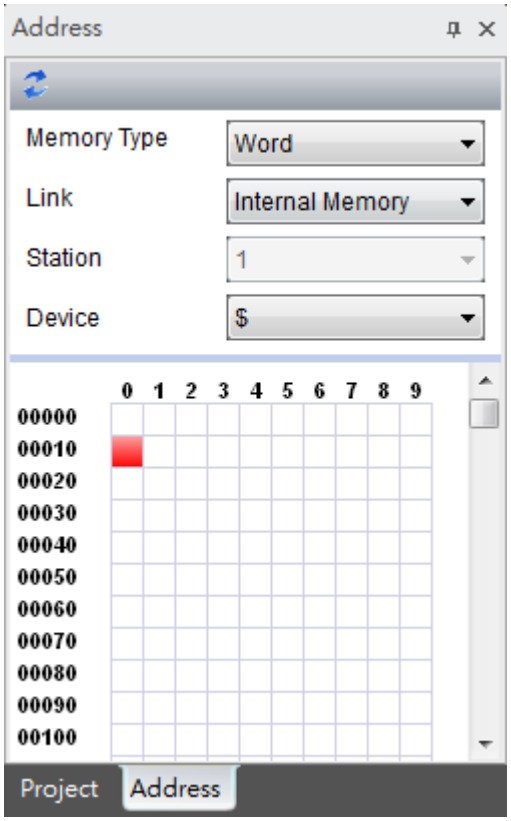


Figure 1.5 Address list window

2. Address Conversion

[Address Conversion] allows you to change the address. You can choose single or multiple elements for address conversion.

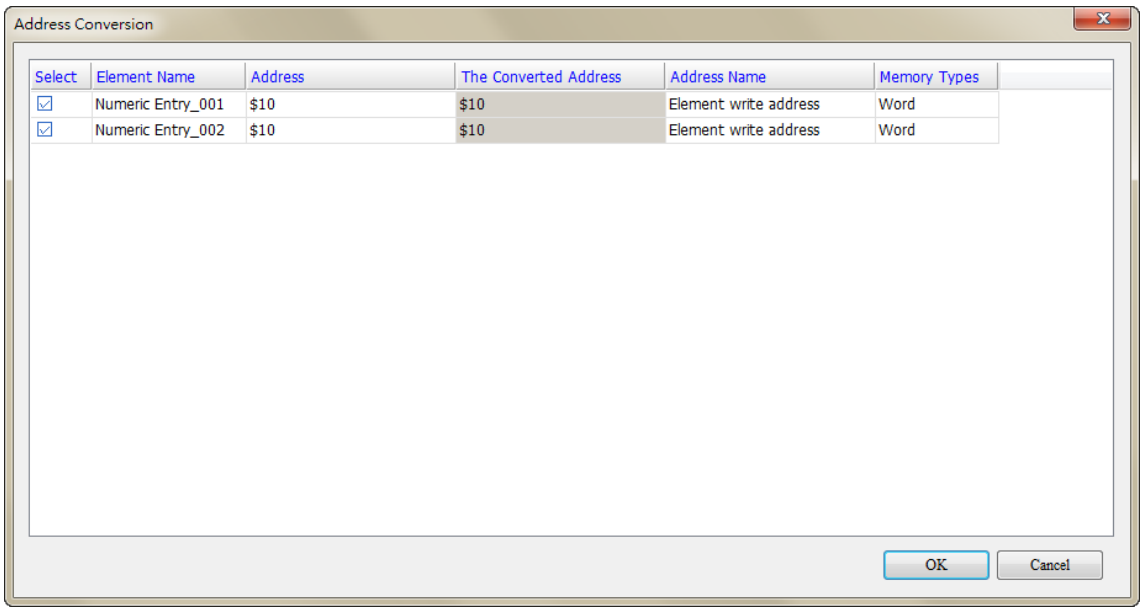


Figure 2.1 Address conversion

3. Lock element (pin)

When you create elements of multiple layers, the Lock element function allows you to pin the element so it is defined as the background and cannot be selected with the cursor. With this function, you will not mistakenly drag the wrong element at the bottom layer and you can click on the right element you intend to select.

Once the element is pinned, you will see a pin icon at the element's upper right corner.

Figure 3.1 Element pin

You can unpin the element by simply clicking the pin.

4. Find

To find the specified text and address, you can go to [Edit] > [Find] or use the keyboard shortcut **CTRL + F** provided by the system. This function allows you to quickly find the result. The search function also added the data type options so the results are more accurate and can be categorized in the displaying result window. After you click the Find function, please enter the content to be found and then go to the [Options] section to select [Current Screen] or [All Screens] in the options. The [Type] search options are [Text], [Element read address], [Element write address] and [All Addresses]. In addition, the selectable search options for [Data Type] are Bit, WORD, or DWORD. See Figure 4.1.

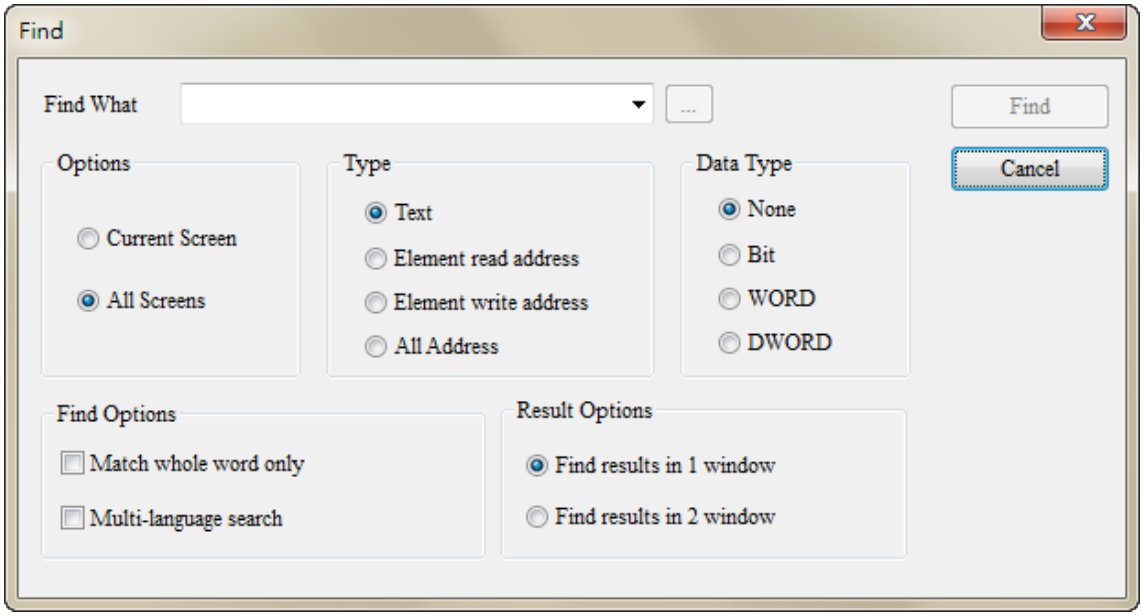


Figure 4.1 Find

Set the search content type and data type and set to show the result in [Search Results 1] or [Search Results 2] window. Next, click the **Find** button and the system starts searching for the matching contents.

When the contents are found, the found elements are output to the specified result window.

If you click the items in the output window, the cursor automatically specifies the given element as shown in Figure 4.2.

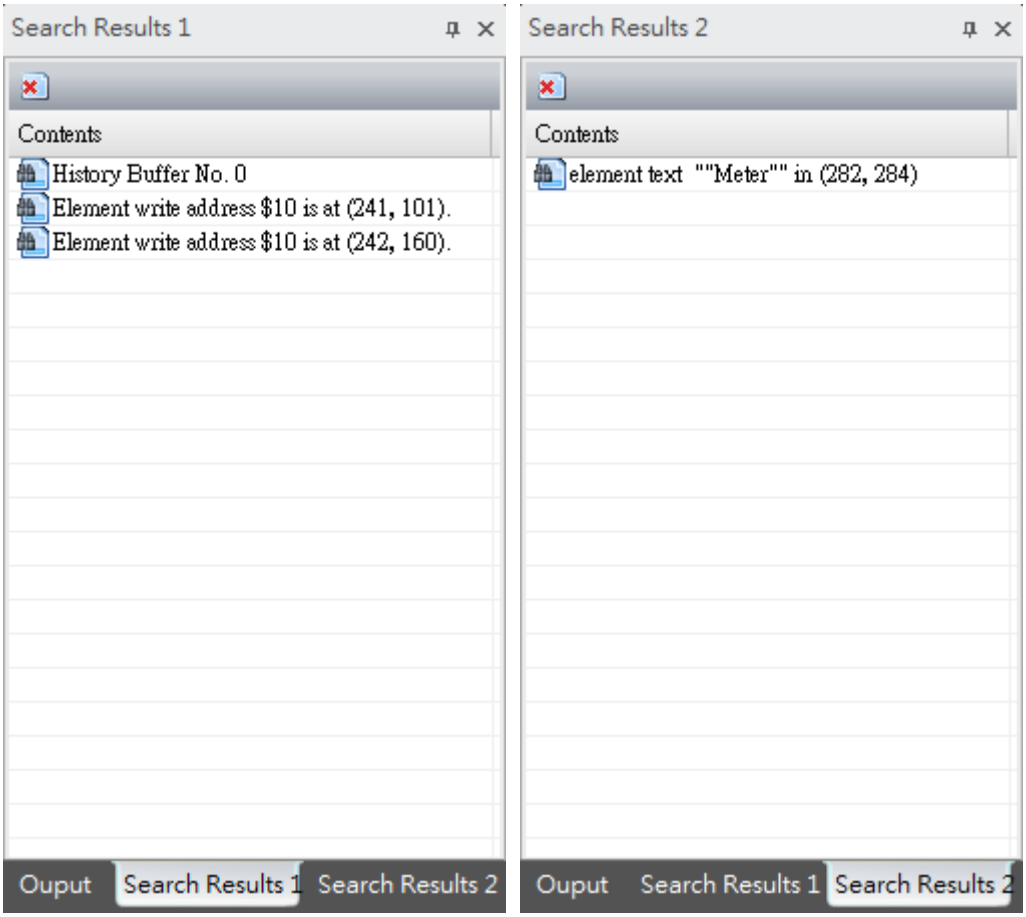


Figure 4.2 Output result

The detailed setting for the Find function is as follows:

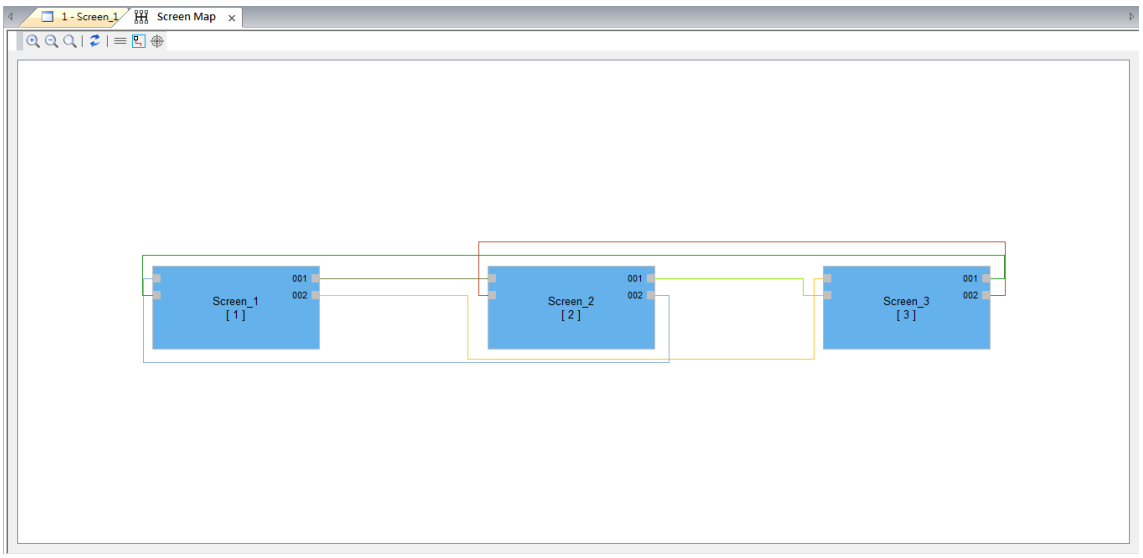
Table 4.1 Find function description

Find		
Find What	Enter the content to be found.	
Options	Current Screen	Only search in the currently editing screen and compare all the elements in the current screen. Then output the matching contents to the output window. You can double-click the items in the output window to find the searched elements.
	All Screens	The system scans all screens to compare every element in each screen, and then display the matched result in the output window. You can also double-click the items in the output window to find the searched elements.
Type	Text	Compare the element text.
	Element read address	Compare the element read address.
	Element write address	Compare the element write address.
	All Address	Compare the read and write addresses of the element.
Data Type	None	When you select “None”, it searches for the memory address without a particular data type specified.
	Bit	Search for the Bit type address.
	WORD	Search for the WORD type address.
	DWORD	Search for the DWORD type address.
Find Options	Match whole word only	Compare all input contents when searching. If this box is unchecked, the results include the input contents that are perfectly and partially matched; on the other hand, if it is checked, the results only show the input content that is perfectly matched.
	Multi-language search	This is only available for searching texts. If this box is unchecked, the HMI only searches for the contents based on the currently used language; if the box is checked, the HMI searches for the contents for all languages.
Result Options	Find results in 1 window	Output the search results to [Search Results 1] window.
	Find results in 2 window	Output the search results to [Search Results 2] window.

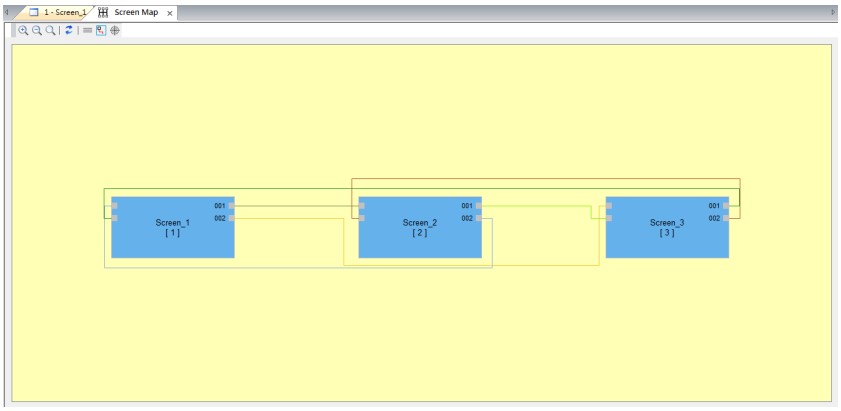
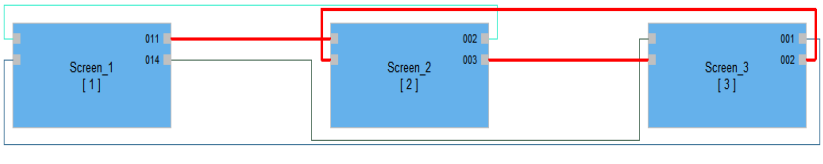
PLC1

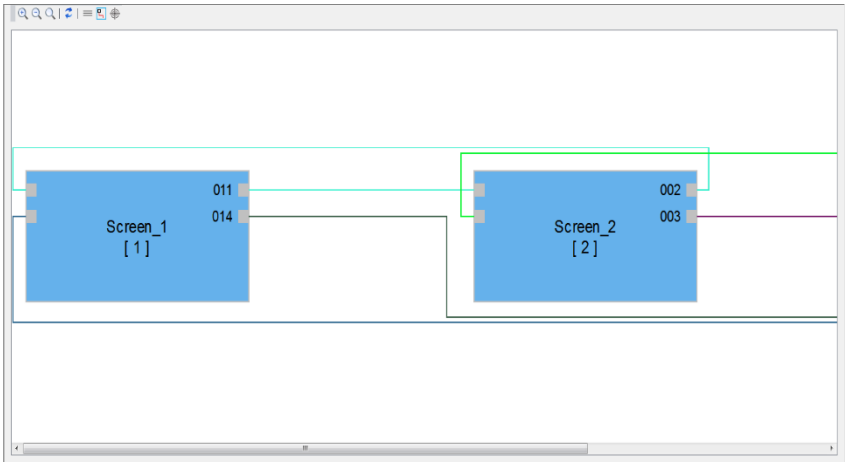
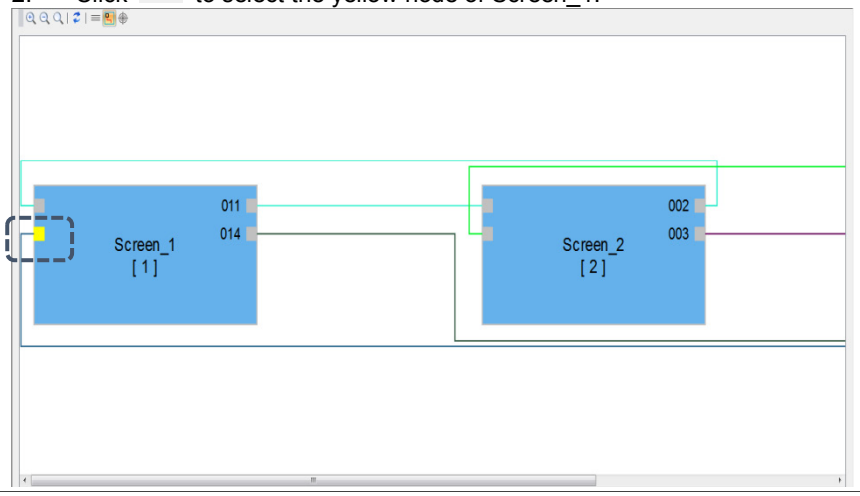
5. Screen Map

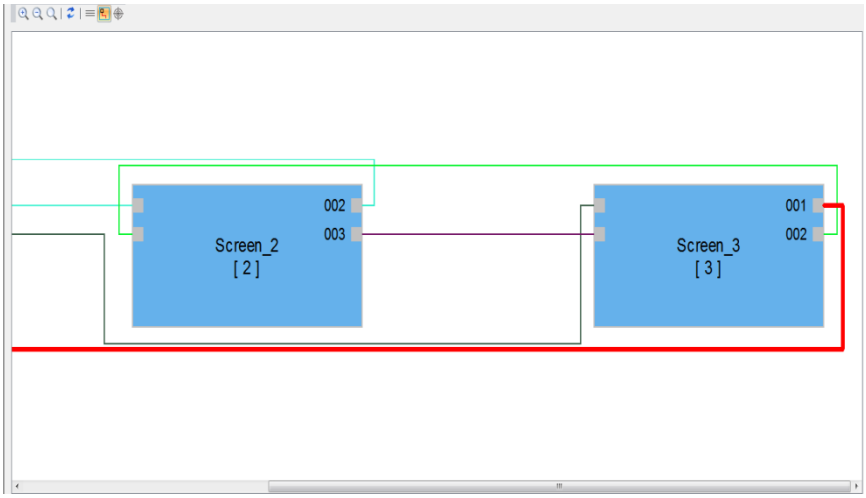
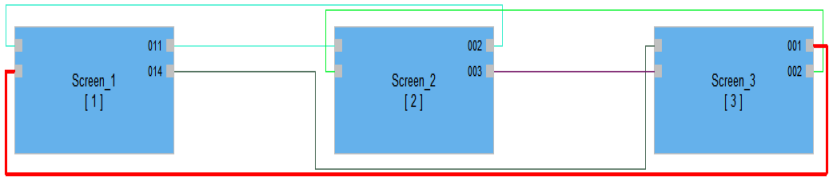
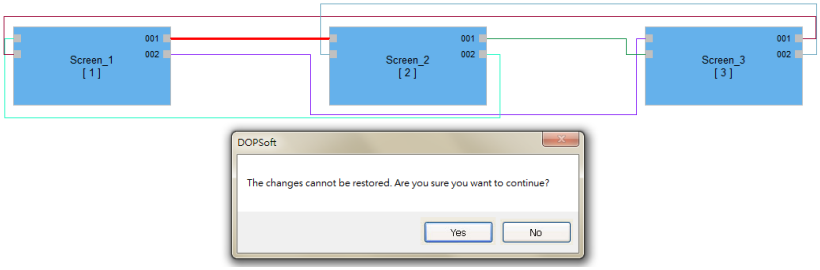
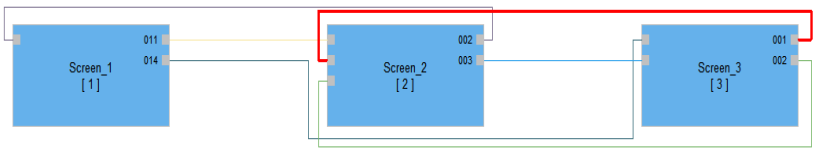
The [Screen Map] enables you to view the linkage between each screen and also allows you to directly change the screen number as required.



The toolbar for [Screen Map]:

Icon	Function name	Function description
	Zoom In	Zoom in to make the screen map appear larger.
	Zoom Out	Zoom out to make the screen map appear smaller.
	1:1	Show the screen map in the original size.
	Update	If you add, modify, or delete any screen button, the background color shows in pale yellow when you open the screen map, meaning the linkage between screens have been changed; meanwhile, you can click this button to update all screen numbers. 
	Multiple Selection	The multiple selection function enables you to select multiple screen links. When selected, the links are in red. 

Icon	Function name	Function description
	Display nodes on the screen after selection	If the screen map is too large that you cannot identify the screen number you switched to, you can click this button to select the node and go to the linked screen number. 1. Zoom in the Screen Map  2. Click to select the yellow node of Screen_1. 

Icon	Function name	Function description
	Display nodes on the screen after selection	3. You will be directed to the screen number linking the yellow node of Screen_1. 
	Select Target Screen	This function directly changes the original linked screen number to another number on the Screen Map. 1. Select node 001 of Screen_1.  2. After you click and select Screen_2, the software prompts a message window showing the original linkage cannot be restored after this change If you want to continue, click **Yes** and node 001 of Screen_1 that is originally linked to Screen_3 is changed to link to Screen_2.  3. The screen number linking to node 001 is changed to Screen_2. 

6. Monitor IO

The Monitoring IO function allows users to monitor values of the I/O devices.

Right click on the On-line Simulation screen and select [Monitor IO], a window pops up (shown in Figure 6.1) and you can start setting and monitoring the I/O devices.

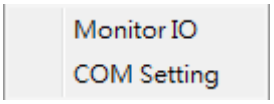
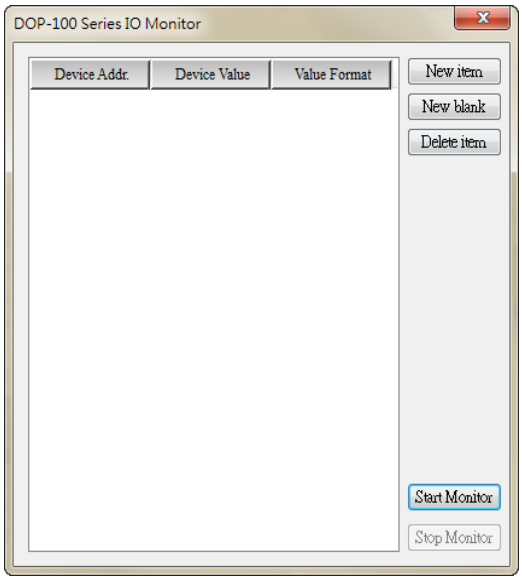


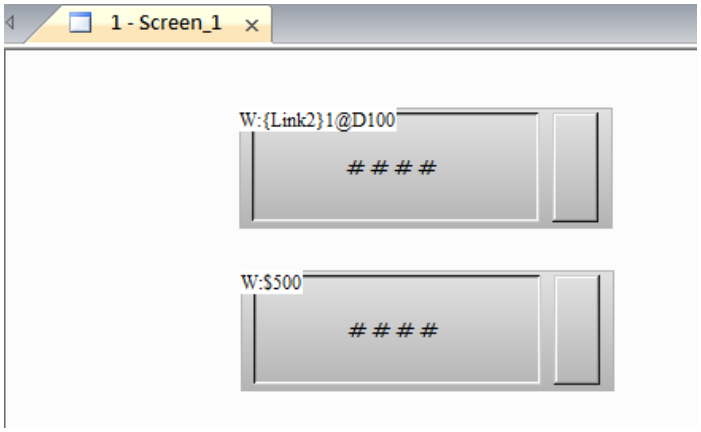
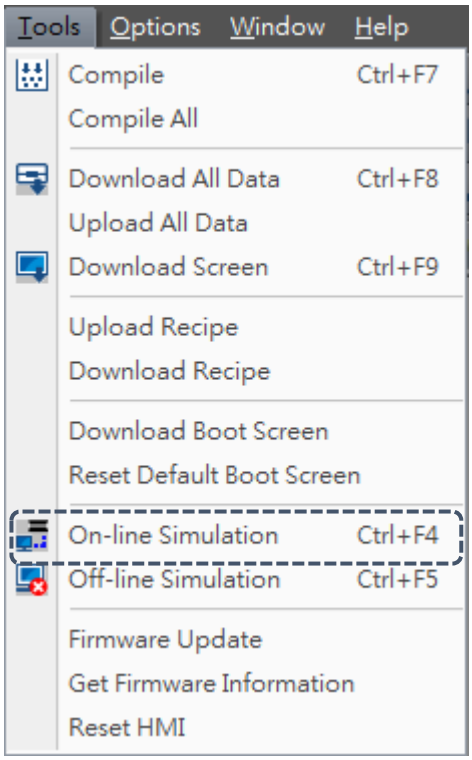
Figure 6.1 Right click to go to [Monitor IO].

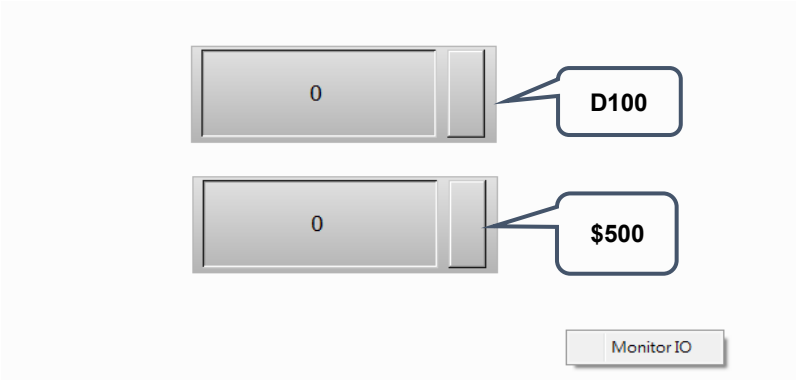
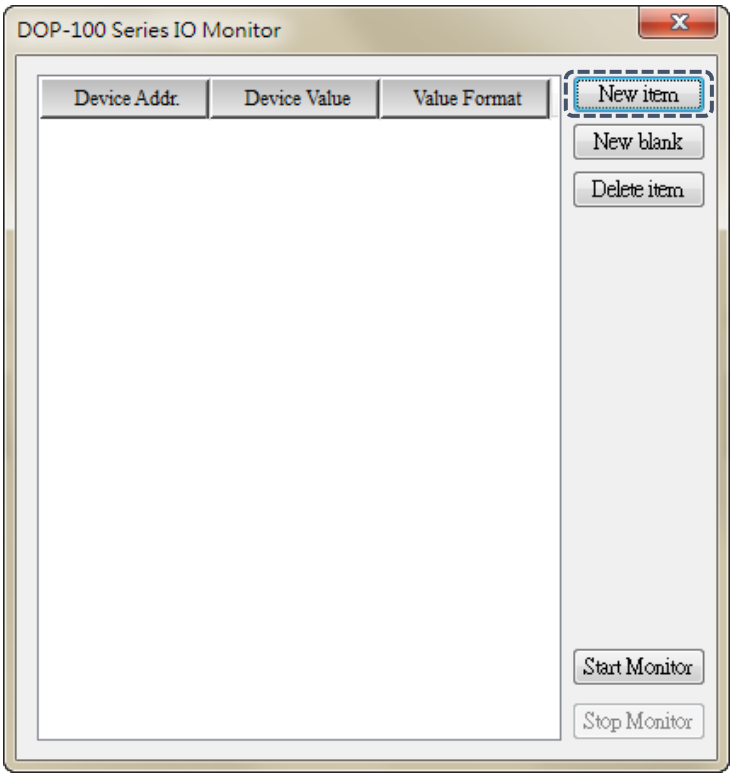
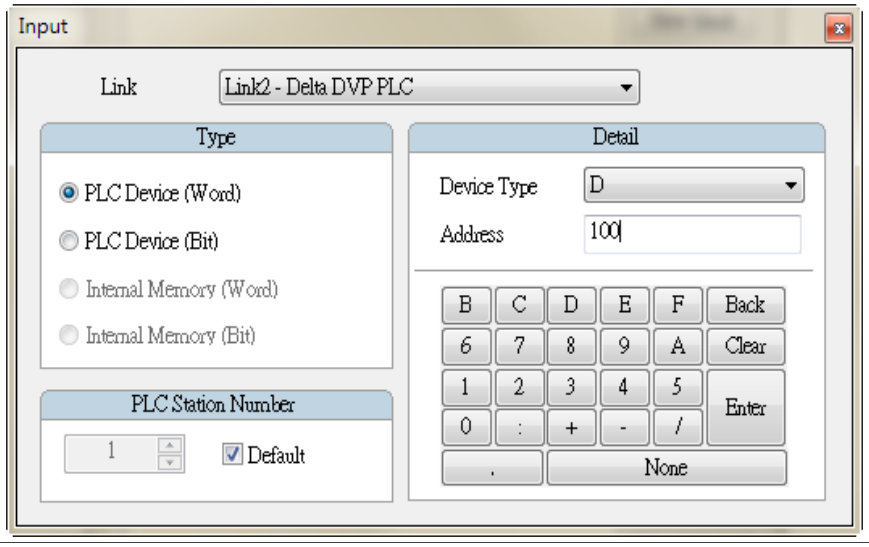
Table 6.1 Monitor IO property description

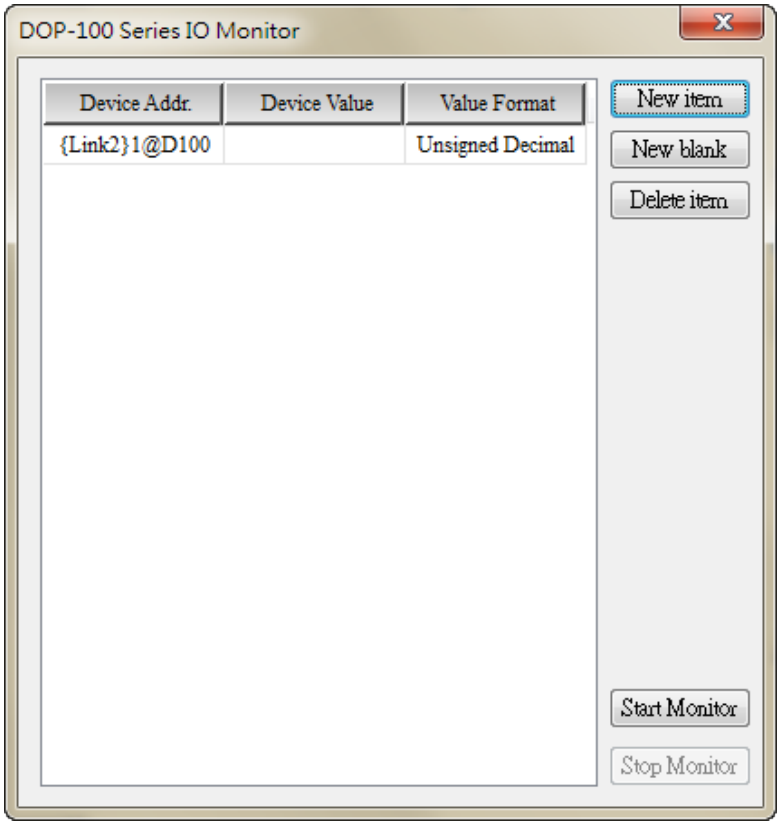
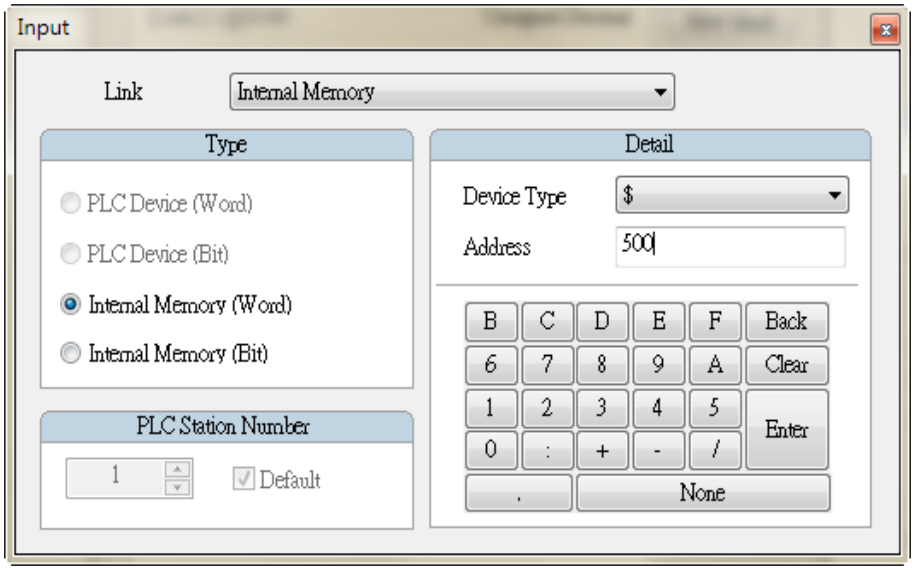
[Monitor IO] property description	
	
New item	Create a new monitoring address with an input box.
New blank	Add a new monitoring column. Different from [New item], you can directly copy and paste the monitoring address instead of using an input box to enter the address.
Delete item	Delete the selected monitoring address.
Start Monitor	Click this button to start monitoring.
Stop Monitor	Click this button to stop monitoring.
Device Addr.	Available options are internal memory and controller register address.
Device Value	Display the values of the monitoring internal memory or controller register and it also promptly changes the values. If you are using Delta PLCs, setting the length is not required.
Value Format	There are four types of value format that can be set, which are signed decimal, unsigned decimal, hexadecimal, and bit.

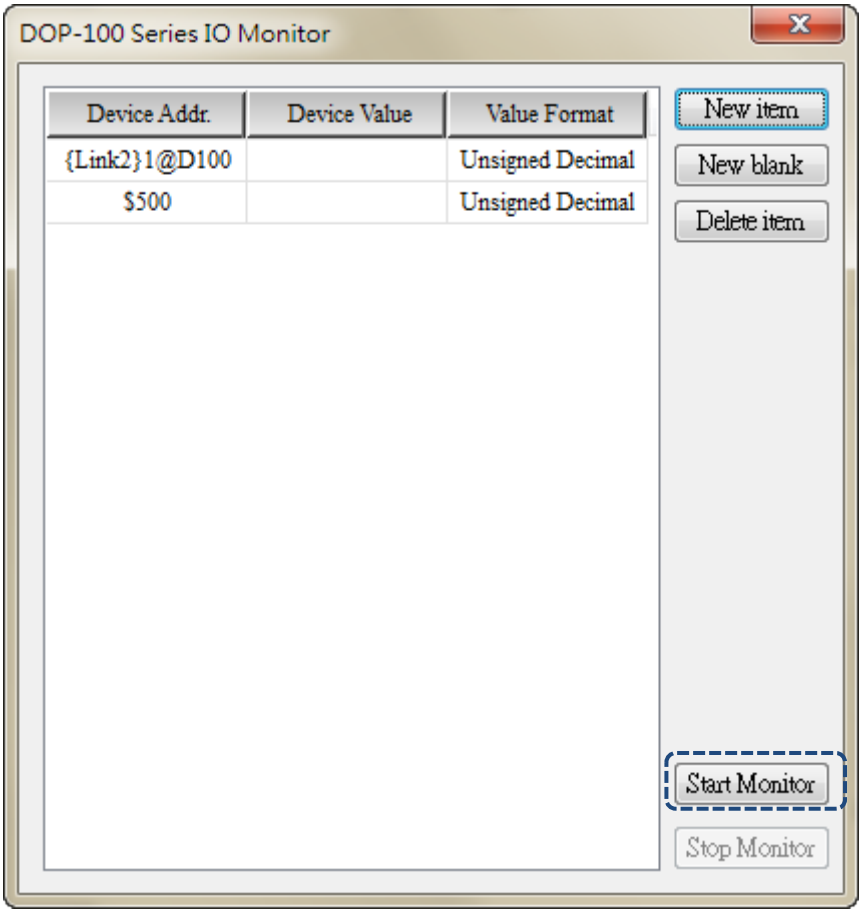
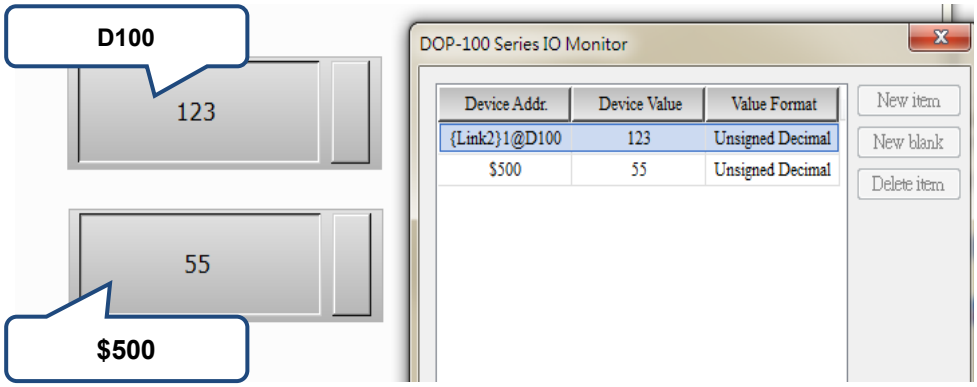
The following section is the example of [Monitor IO].

Table 6.2 [Monitor IO] example descriptions

[Monitor IO] example descriptions	
Create numeric entry elements	Create two numeric entry elements, and set the write memory address to $500 and {Link2}2@D100. 
Enter the [Monitor IO] window	The steps are as follows: 1. Click [Tools] > [On-line Simulation]. 

[Monitor IO] example descriptions	
Enter the [Monitor IO] window.	2. Right click on the simulation screen and select [Monitor IO]. 
Set the monitoring address	The steps are as follows: 1. Click **New item** to create a new monitoring address.  2. Select {Link2}2@D100 as the monitoring address. 

[Monitor IO] example descriptions	
Set the monitoring address	3. After setting completed, the screen is as follows:  4. Repeat Step 1 and Step 2 to set another monitoring address $500: 

[Monitor IO] example descriptions	
Start monitoring the address	Press **Start Monitor** to start monitoring. 
Execution results	The [Monitor IO] window enables you to promptly monitor the set address and monitor the values of {Link2}2@D100 and $500 in the [Device Value] column as well as modifying the device values in this window. 

7. Multiple actions

The **Multiple actions** button provides multiple actions. You can define the actions to execute when you press, release, or long press the button. You can use this function to replace the complicated programming process for the macro to trigger the button action.

Available button actions in the [Multiple actions] settings are as follows:

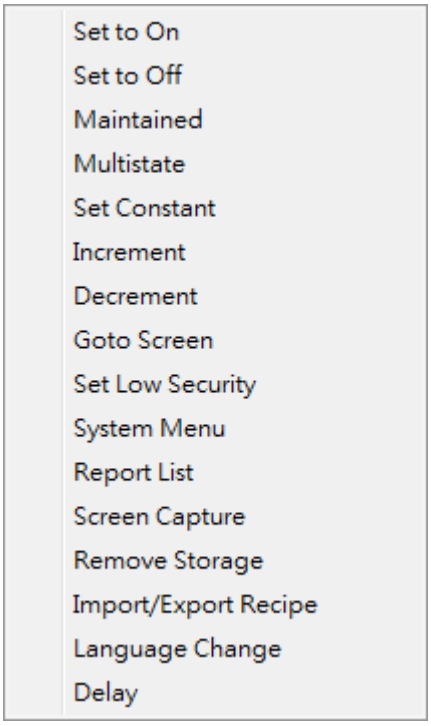
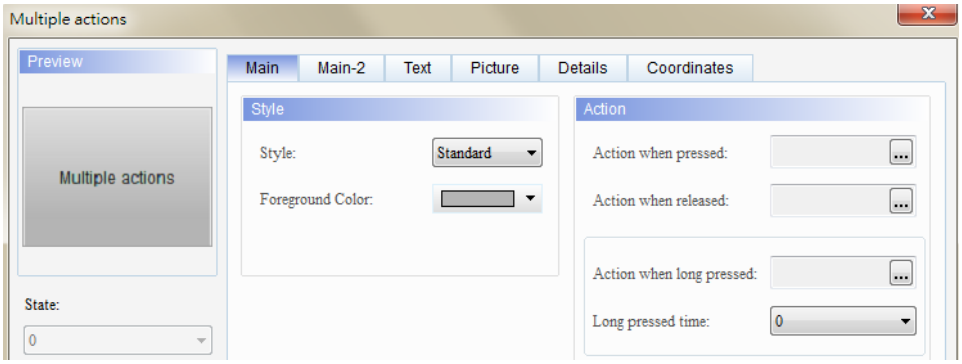
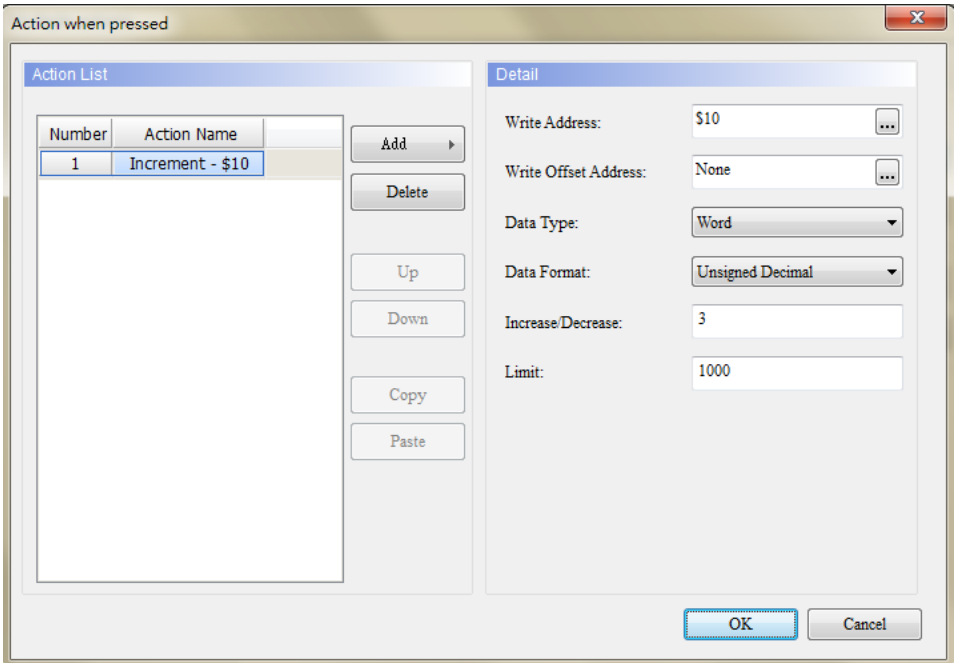


Figure 7.1 Button actions available in the Multiple actions function

Note:
1. Each press, release, and long press action can add up to 32 sub-actions, thus one multiple actions button can execute up to 32 x 3 actions.
2. The System Menu can only be the last action. (You cannot add any action following the System Menu).
3. One multiple actions button can only have one page change action (including Goto screen Previous Page).
4. If the button is set with a macro, the execution of the macro is invalid.

Example descriptions for the multiple actions function is as follows:

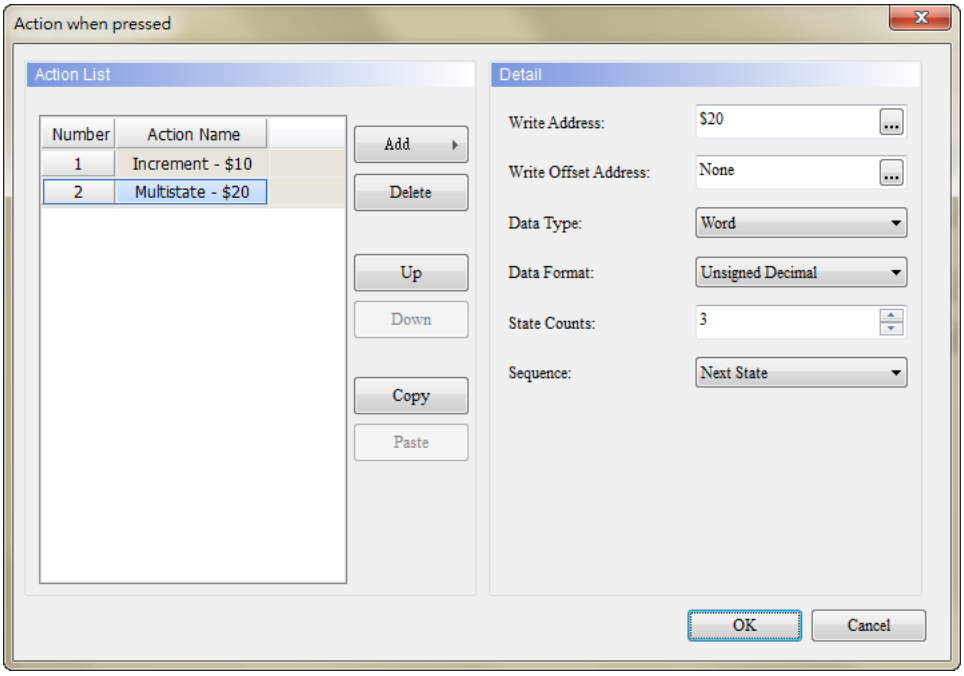
Table 7.1 Multiple actions button example descriptions

Multiple actions button	
Set the multiple actions	■ Create a multiple actions button.  ■ Set the button press action. Set Number 1 to increment. Then, set [Write Address] to $10, set the [Increase/Decrease] value to 3, and set [Limit] to 1000. 

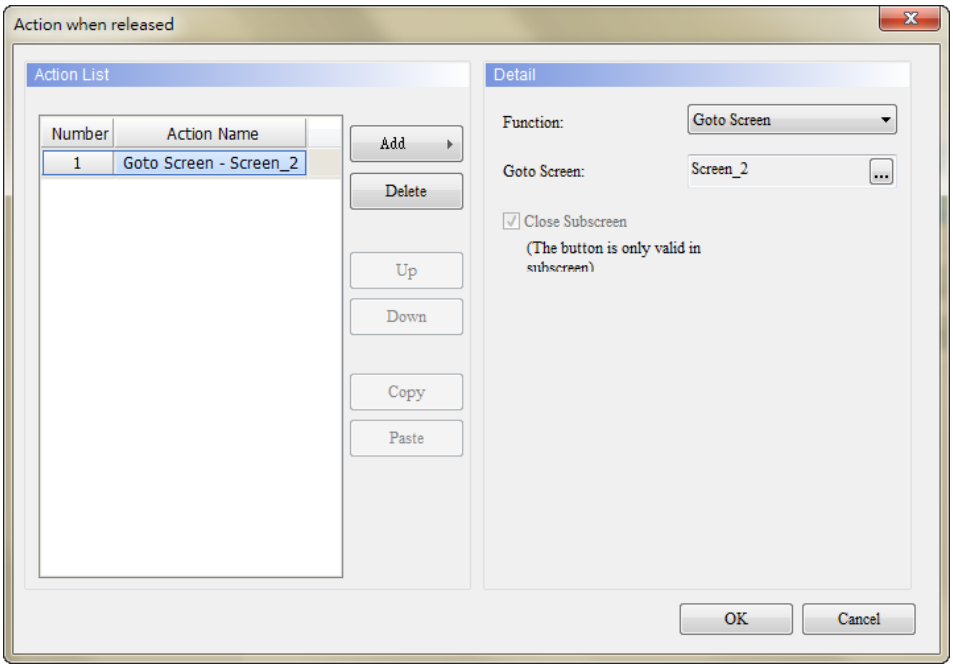
Multiple actions button

Set the multiple actions

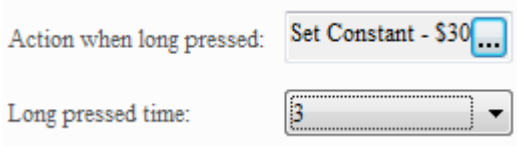
- Set the button press action. Set Number 2 to multi-state and the [Write Address] to $20. The other settings are shown in the figure below.



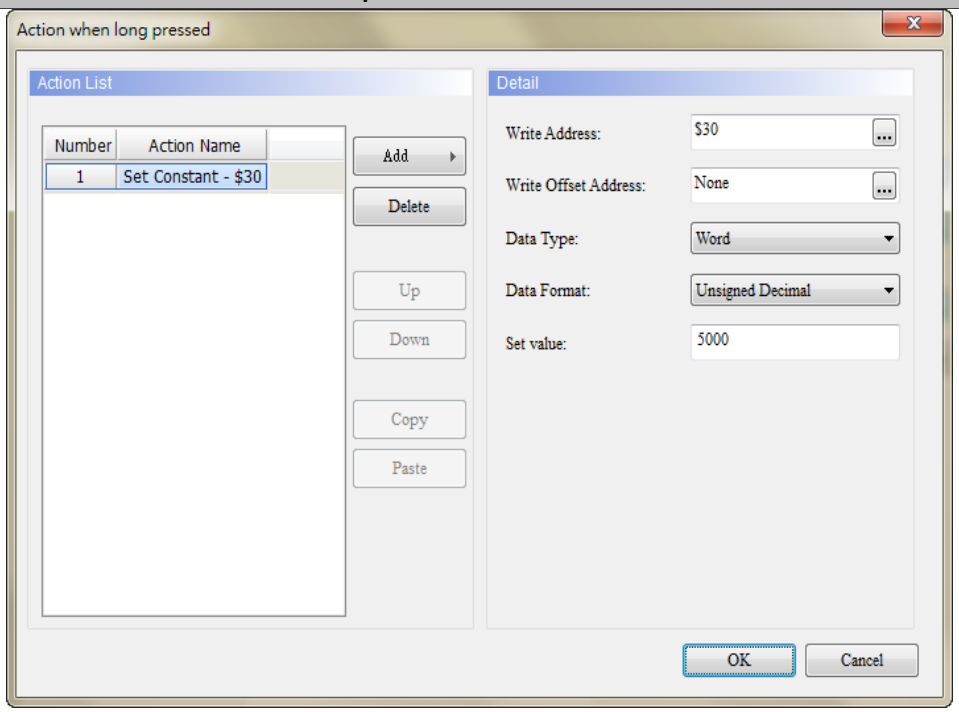
- Set the button release action to go to Screen_2.



- Set the button long press action to constant and set the long press duration to 3 seconds. Set the [Write Address] to $30 and setting the value to 5000.

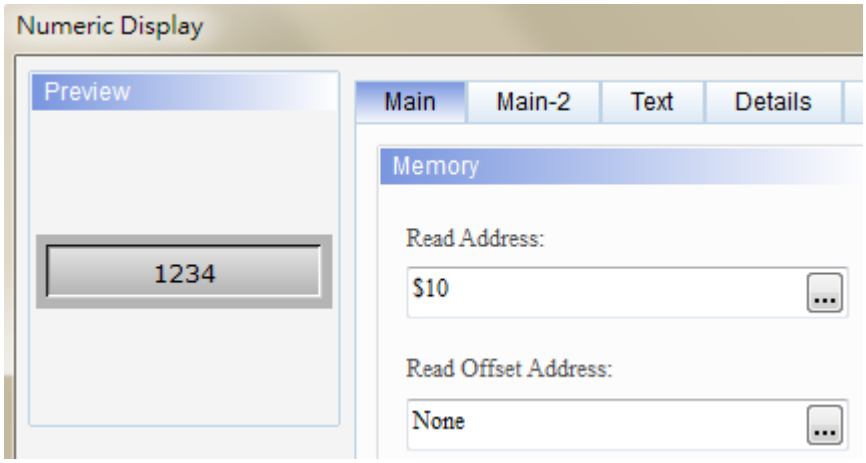


Multiple actions button

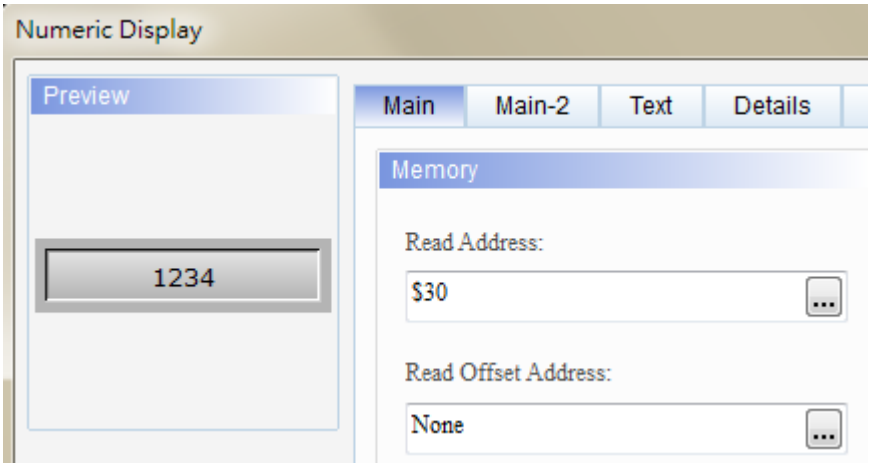


Set numeric display elements

- Create a numeric display element which read address is $10 for displaying the changed value after the increment action is executed.



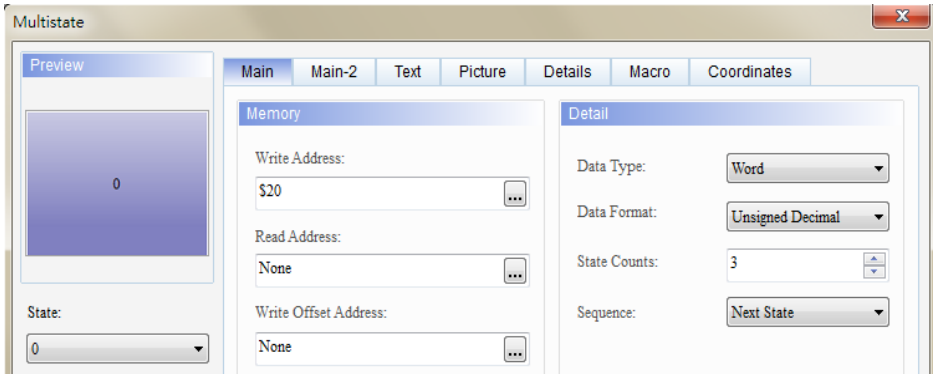
- Create a numeric display element which read address is $30 for displaying the changed value after the setting constant action is executed.



Multiple actions button

Set a multi-state button

■ Create a multi-state button. Set the [Write Address] to $20 and [State Counts] to 3 and the switching sequence (Sequence) to “Next State”.

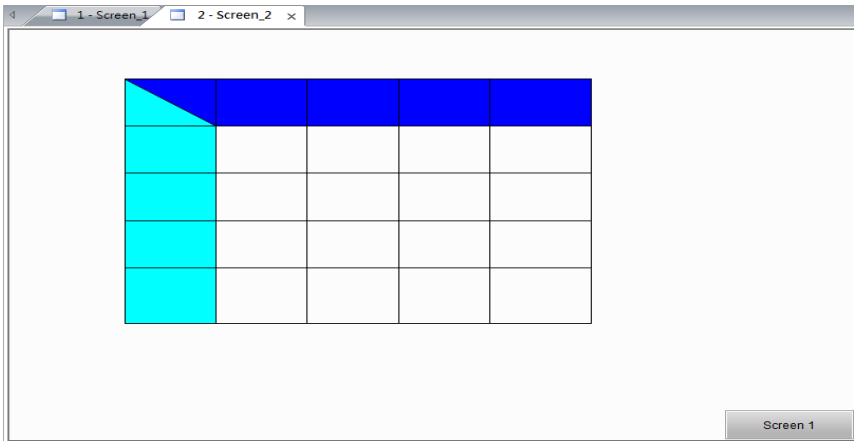


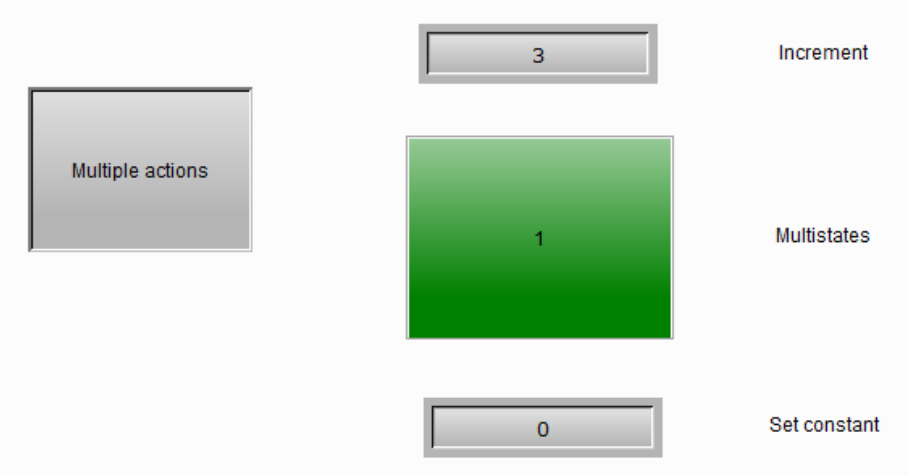
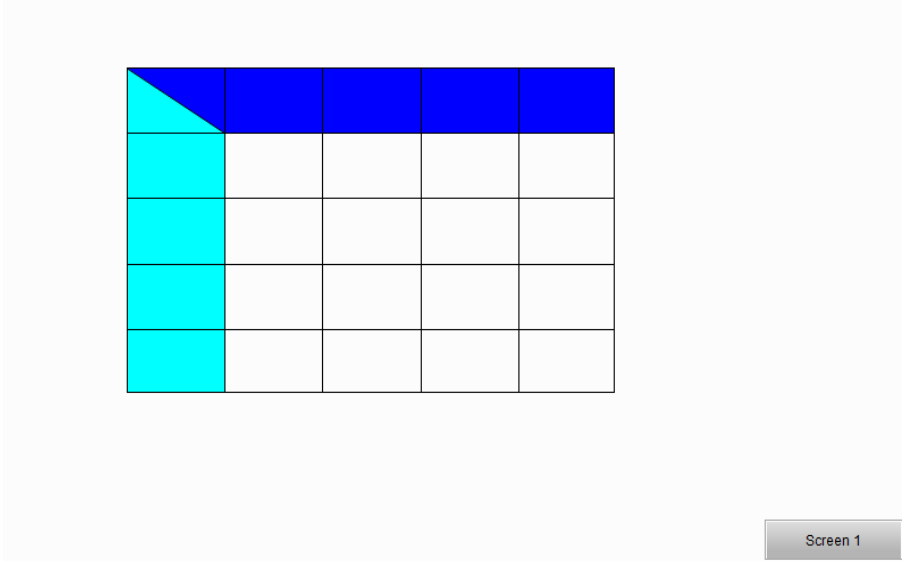
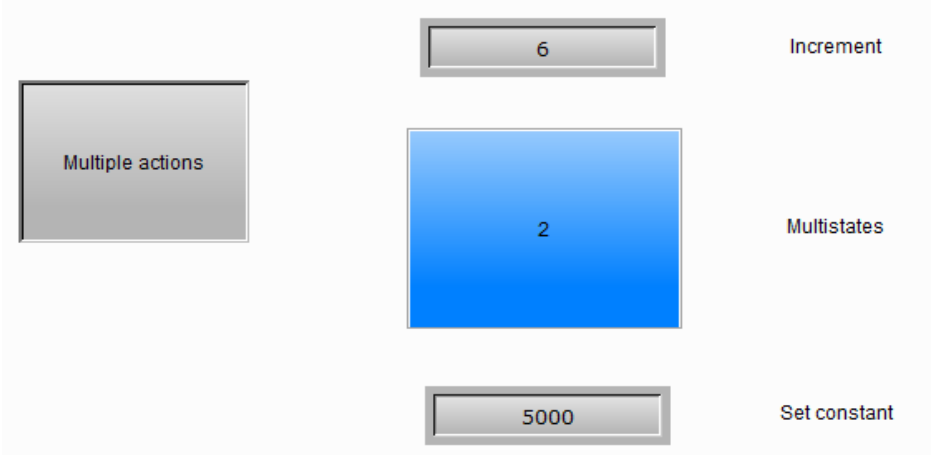
■ Set the foreground color for state 0, 1, and 2.

State	Foreground Color
0	
1	
2	

New Screen

Add Screen_2. Create a table element and a page change element which is set to switch to Screen_1.



Multiple actions button	
Execution results	■ If you press the multiple actions button, the increment and multi-state actions are executed.  ■ If you release the multiple actions button, the screen change action is executed and the HMI screen changes to Screen_2.  ■ When you change the screen to Screen_1 and long press the multiple actions button for 3 seconds, the “setting to constant” action is executed. Apart from the long press button action (3 seconds), the HMI also executes the button press action, so it executes both increment and multi-state actions. 

The figure below is the property setting screen when you double-click the multiple actions button.

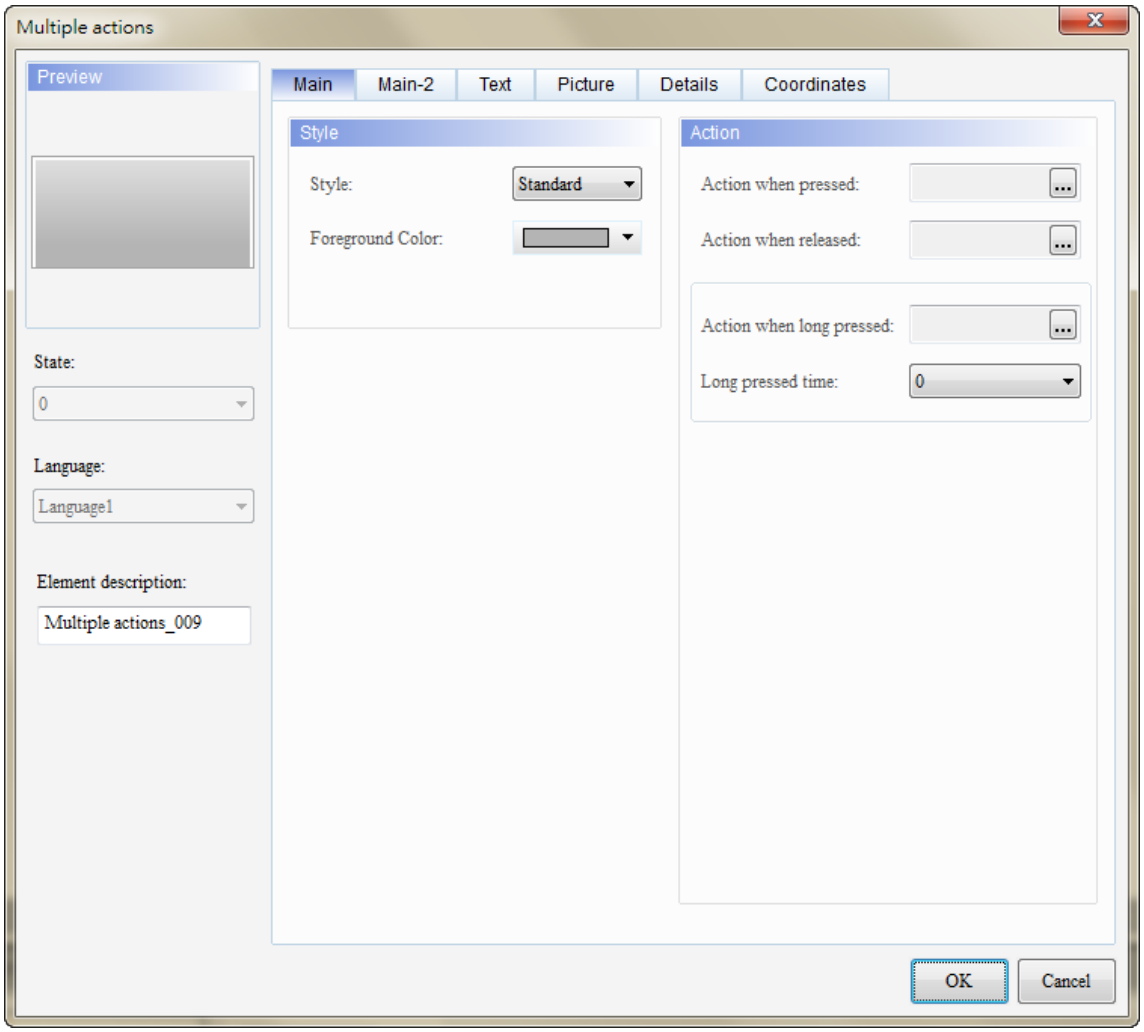


Figure 7.2 Property for Multiple actions button elements

Table 7.2 Function page for Multiple actions buttons

Multiple actions button	
Function page	**Description**
Preview	The multiple actions button can only be used for viewing the multi-language display data because the element does not have multiple states.
Main	Set the element style and element foreground color. Set the actions when you press, release, and long press the button as well as the long press time.
Main-2	Set the transparency value, enable the animation, and enable the anti-aliasing function.
Text	Set the text content, font, size, color, format, zoom, and alignment type.
Picture	Set the picture bank name, alignment, graphic extension, and specifies the transparent color of the image.
Details	Set the interlock state, interlock address, invisible address, user security level, as well as setting to low security level after the input.
Coordinates	Set the X and Y coordinates, width, and height of the button element.

■ Main

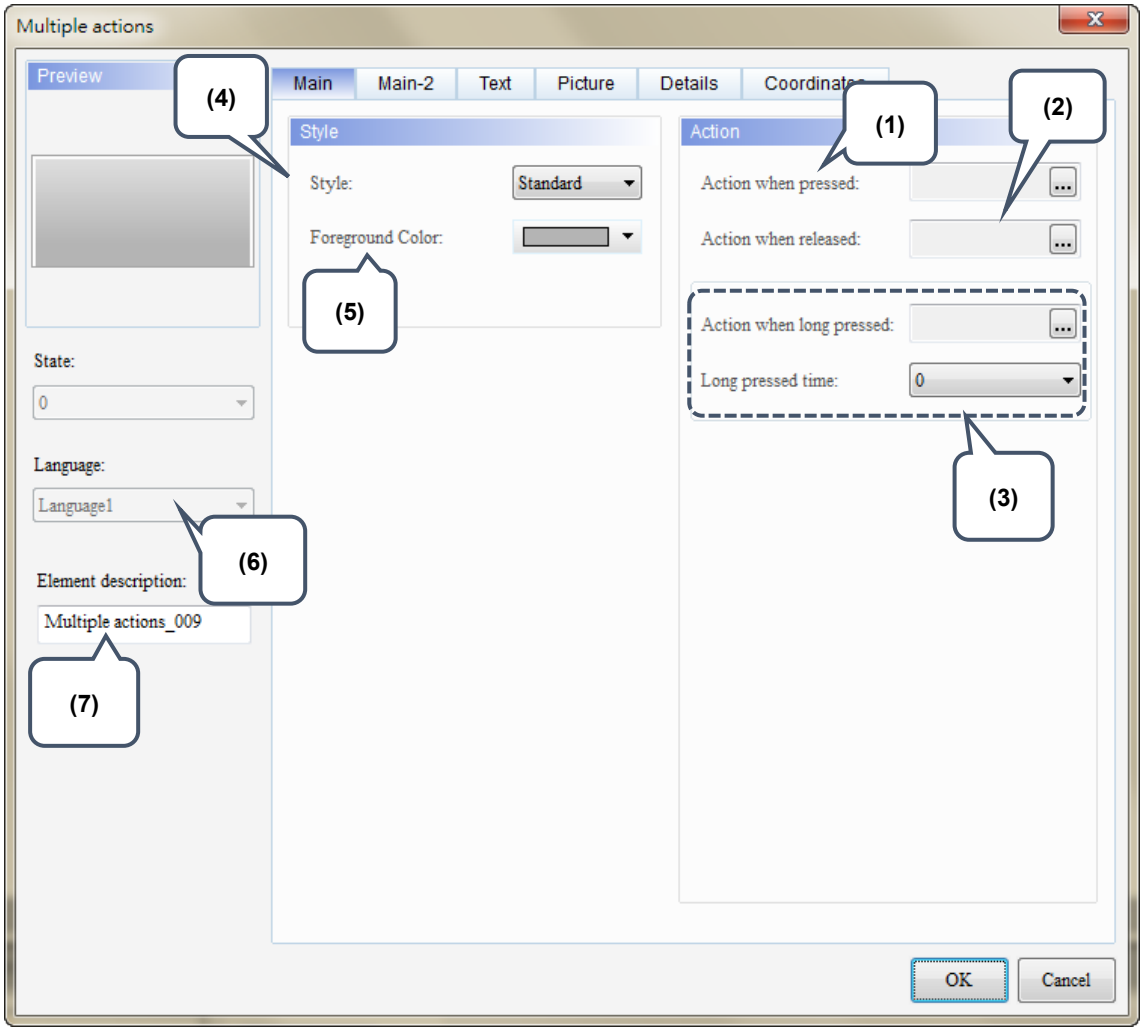
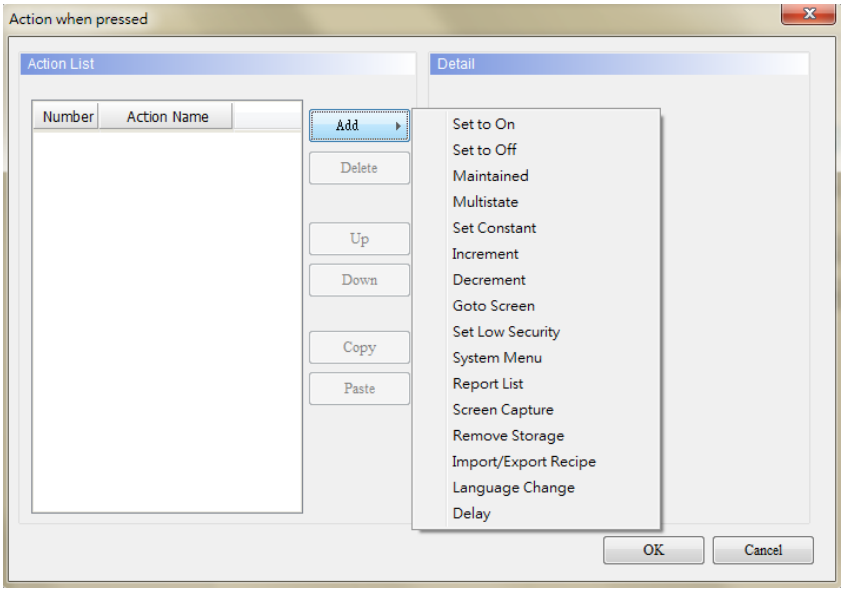
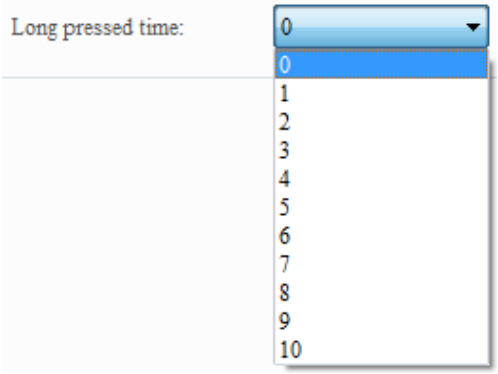
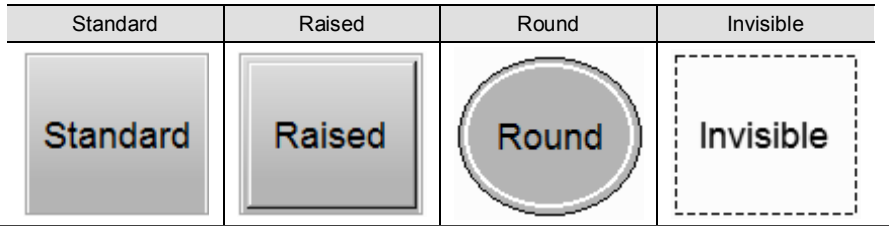
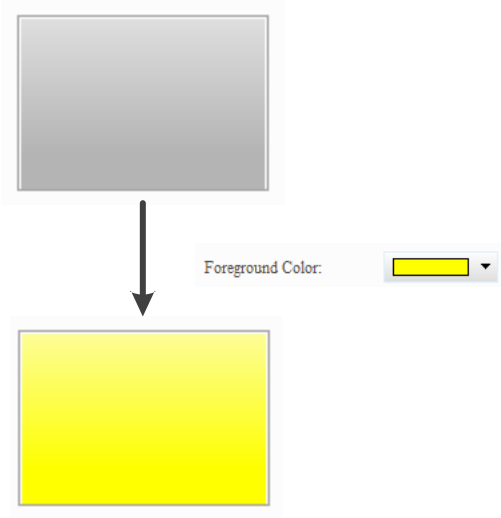
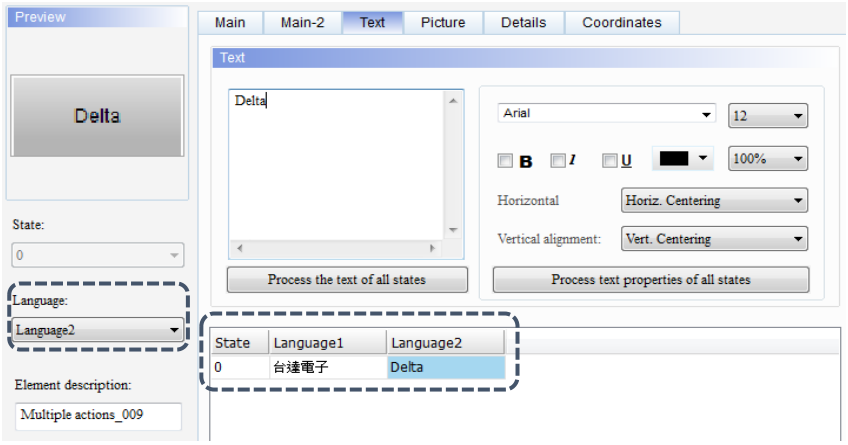
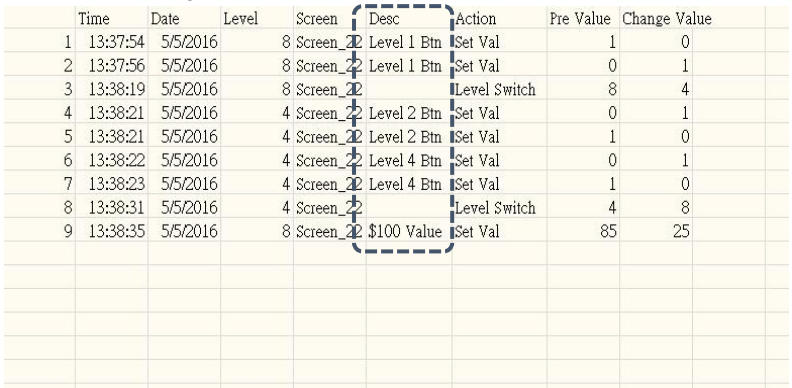


Figure 7.3 [Main] property setting page for the Multiple actions button element

No.	Property	Function description
(1)	Action when pressed	■ It is the action to execute after you press the multiple actions button. ■ The supported button actions after the button is pressed are shown as below: 
(2)	Action when released	■ It is the action to execute after you release the multiple actions button. ■ The supported button actions are the same as that of [Action when pressed].
(3)	Action when long pressed	■ It is the action to execute after you long press the multiple actions button. ■ You must set the long press time to have the long press button action work. ■ The supported button actions are the same as that of [Action when pressed] and [Action when released].
	Long press time	The setting range for long press time is 0 - 10 second(s). 
(4)	Style	The available element styles are Standard, Raised, Round, and Invisible. This setting allows users to change the element appearance. 

No.	Property	Function description
(5)	Foreground Color	■ Sets the element foreground color. ■ When you set the element type to “Invisible”, the foreground color setting is invalid. 
(6)	Language	If you have set the language data, you can use the language used for the element to edit the displaying text, property, etc. 
(7)	Element Description	Record the button actions to be executed. The record is written in the CSV file of the Operation Log Table so users can know what actions have been done. 

	Time	Date	Level	Screen	Desc	Action	Pre Value	Change Value
1	13:37:54	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	1	0
2	13:37:56	5/5/2016	8	Screen_22	Level 1 Btn	Set Val	0	1
3	13:38:19	5/5/2016	8	Screen_22		Level Switch	8	4
4	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	0	1
5	13:38:21	5/5/2016	4	Screen_22	Level 2 Btn	Set Val	1	0
6	13:38:22	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	0	1
7	13:38:23	5/5/2016	4	Screen_22	Level 4 Btn	Set Val	1	0
8	13:38:31	5/5/2016	4	Screen_22		Level Switch	4	8
9	13:38:35	5/5/2016	8	Screen_22	$100 Value	Set Val	85	25

■ Main-2

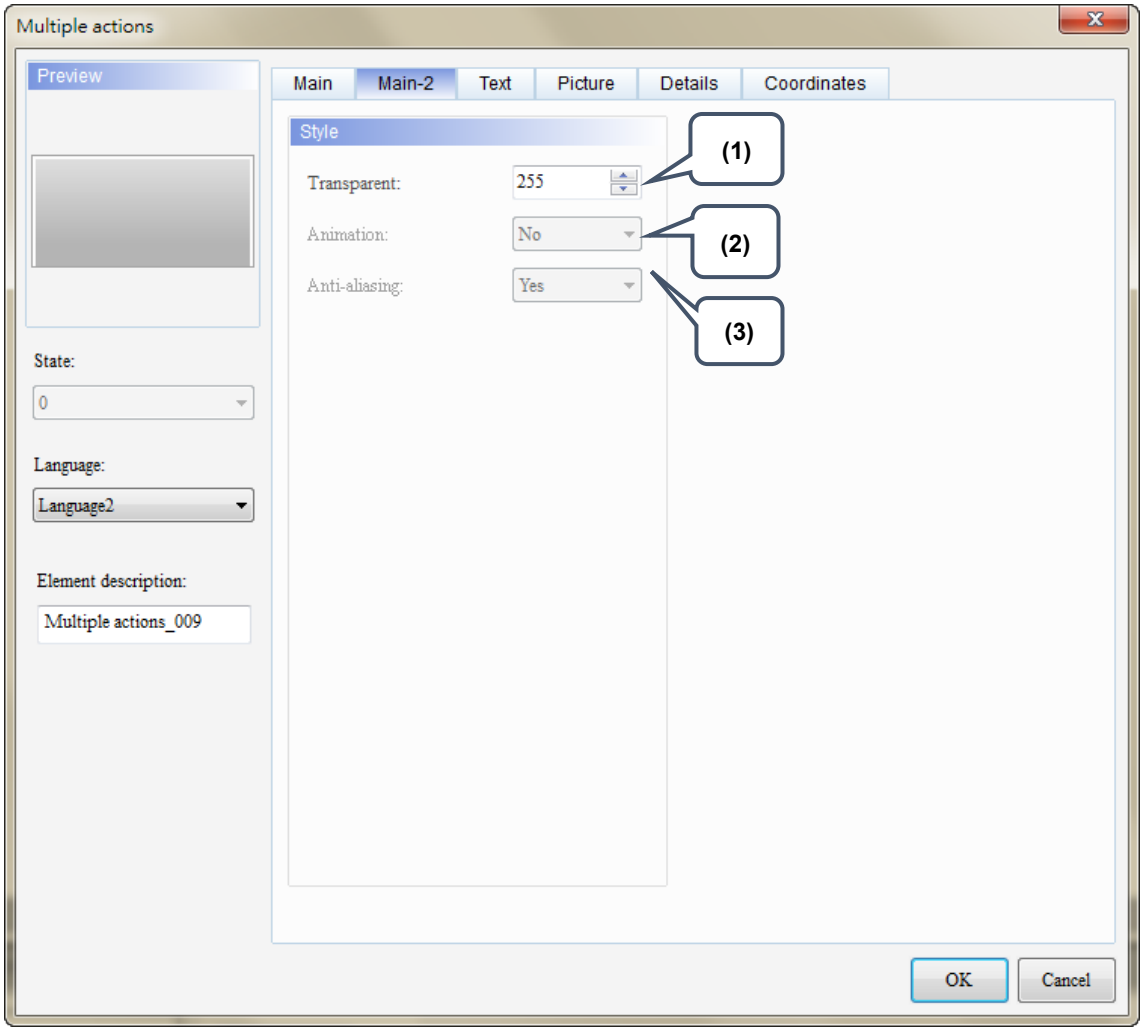


Figure 7.4 [Main-2] property page for multiple actions button elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Animation	The [Animation] function is not available for this element.
(3)	Anti-aliasing	The [Anti-aliasing] function is not available for this element.

■ Text

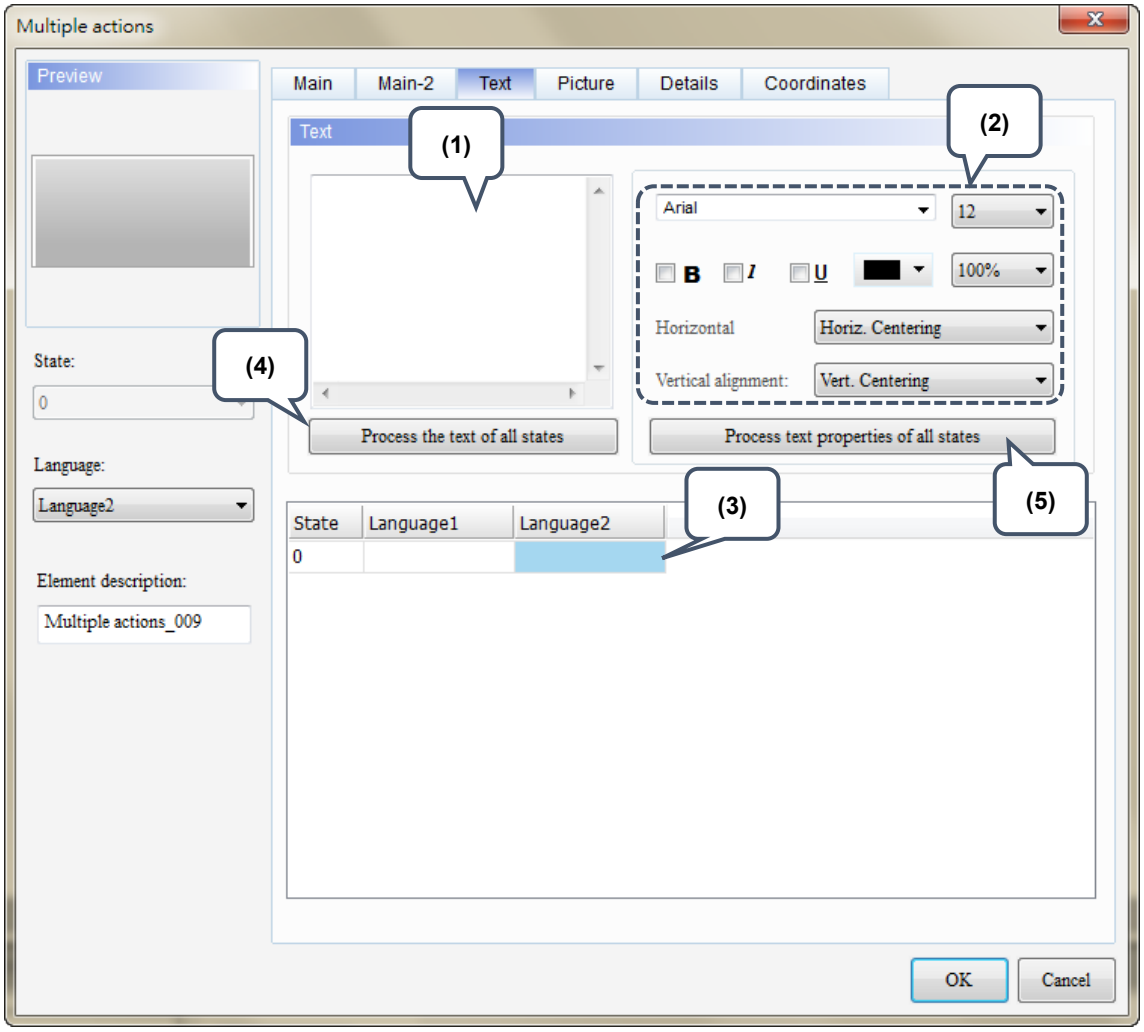
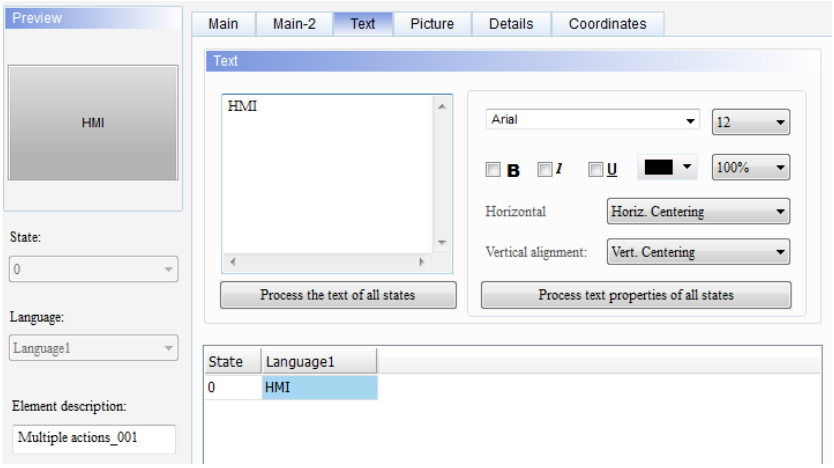


Figure 7.5 [Text] property page for multiple actions buttons

No.	Property	Function description
(1)	Text	■ You can enter the text to display in this box.  ■ As long as the element allows text input, you can click the element and press the space key to start editing the text immediately.
(2)	Text Property	Sets the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline. You can refer to the Preview section in the figure above for the text property setting results.

No.	Property	Function description
(3)	Edit Multi-language Text	If you have added multi-language text, the [Text] page allows you to edit multi-language data (shown in the figure of text property); you can enter contents in English in the English column.
(4)	Process the Text of All States	The multiple actions have only one state, so this function is not applicable.
(5)	Process Text Properties of All States	The multiple actions have only one state, so this function is not applicable.

■ Picture

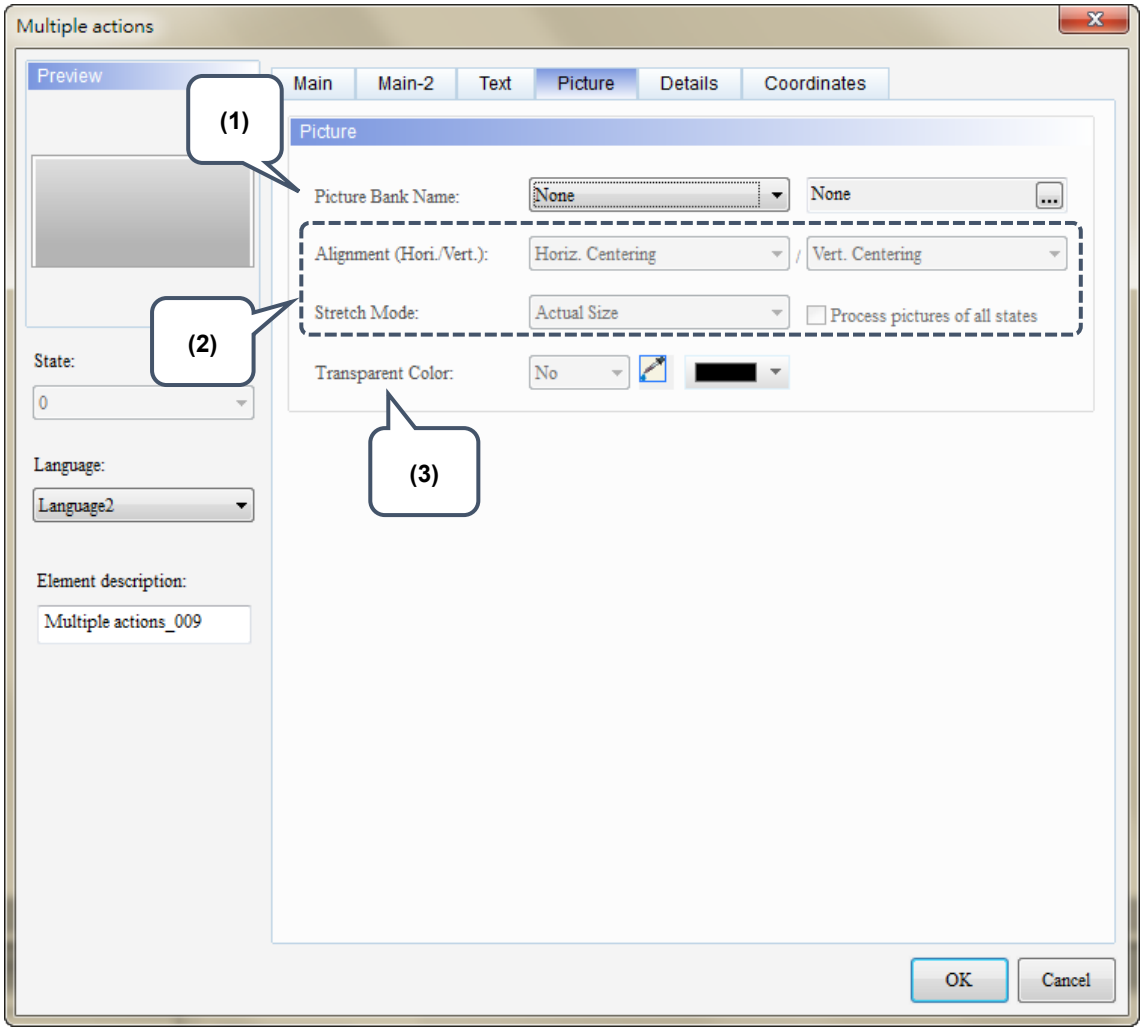
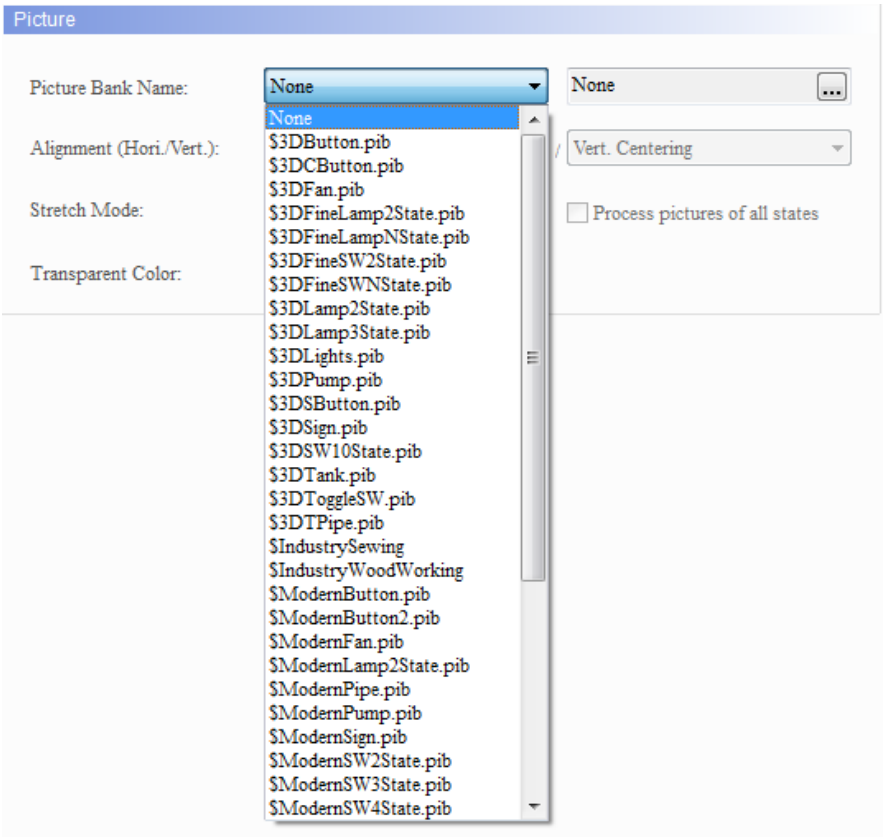
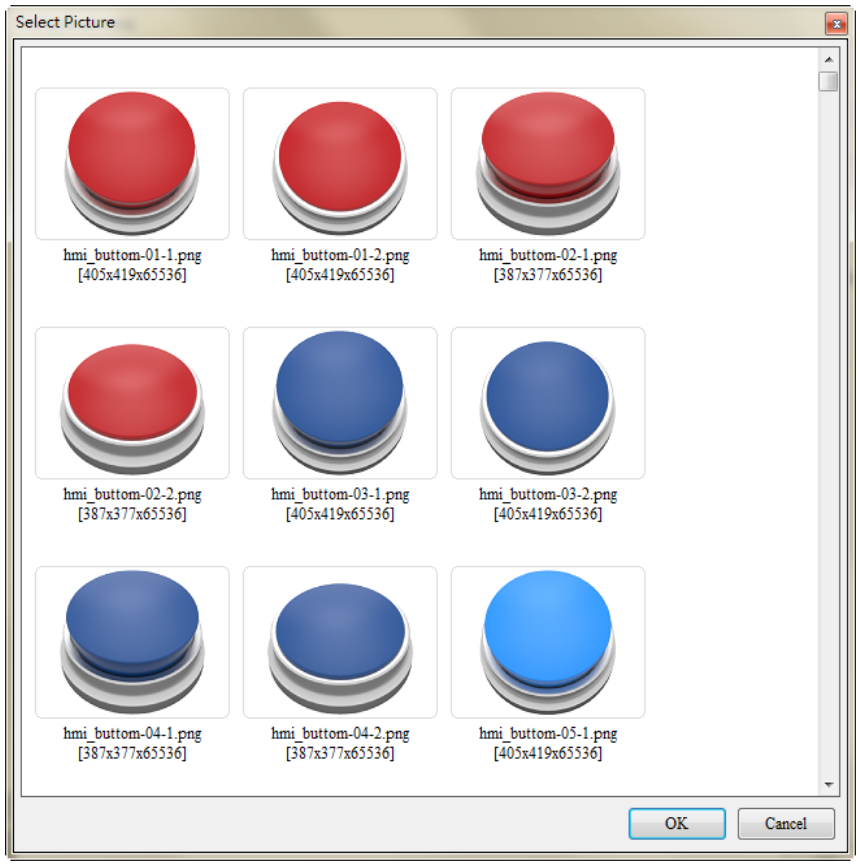
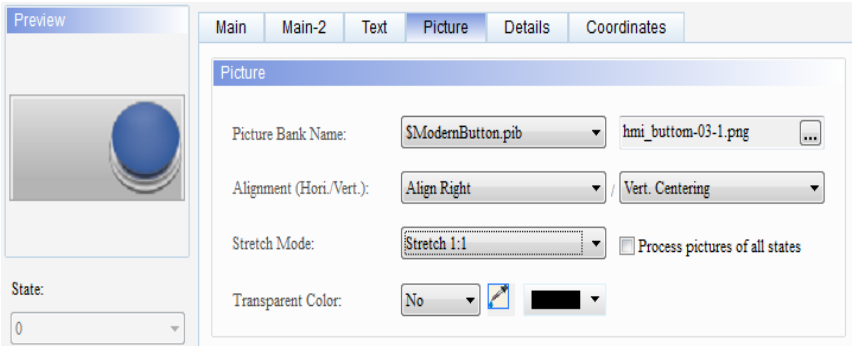
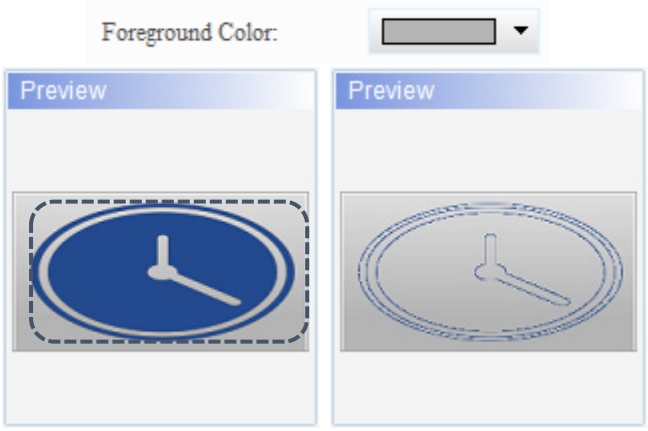


Figure 7.6 [Picture] property page for the Multiple actions button element

No.	Property	Function description
(1)	Picture Bank Name	The default for [Picture Bank Name] is “None”. To set the picture display, use the drop-down list to select the picture bank provided by the software and then select the picture you need.





<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td rowspan="2">(2)</td><td>Alignment</td><td>You can use the alignment options to set how pictures are aligned.
 
</td></tr>
<tr><td>Stretch Mode</td><td>■ The Stretch Mode options include [Stretch All], [Stretch 1:1], and [Actual Size].
<table>
<tr><th>Stretch All</th><th>Stretch 1:1</th><th>Actual Size</th></tr>
<tr><td>If you select [Stretch All], the picture fills the full element display area.</td><td>If you select [Stretch 1:1], the picture displays in 1:1 size based on the element width and length.</td><td>If you select [Actual Size], regardless of the element size, the picture displays in actual size in the element display area.</td></tr>
<tr><td> </td><td> </td><td> </td></tr>
</table>
■ If you select [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them respectively, which saves the editing time.
</td></tr>
<tr><td>(3)</td><td>Transparent Color</td><td>Specifies a color in the picture and turn this color into transparent. is for selecting the transparent color. If you select the blue part in the clock, the software changes the blue parts into transparent, which color is identical to the element foreground color.
 
</td></tr>
</table>

■ Details

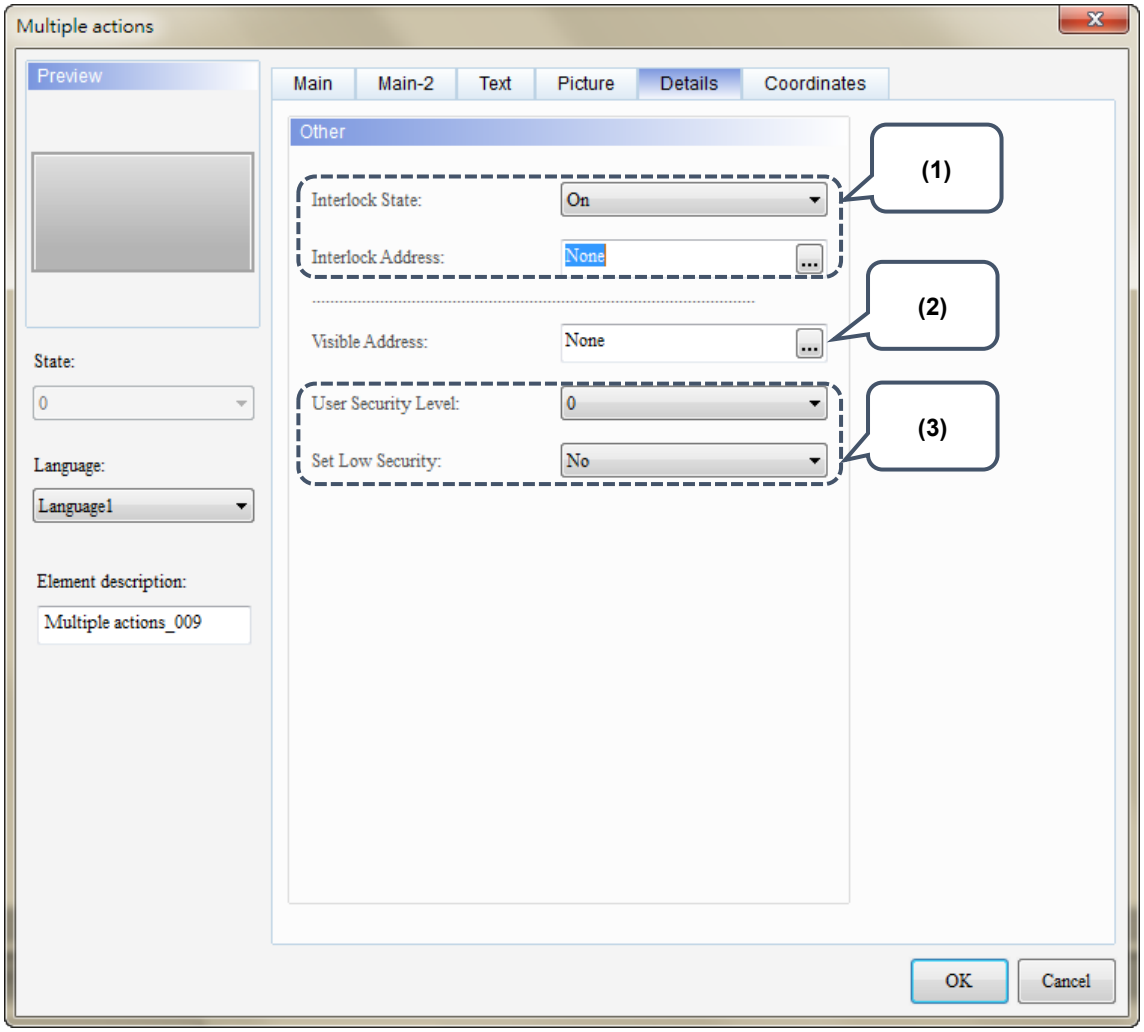
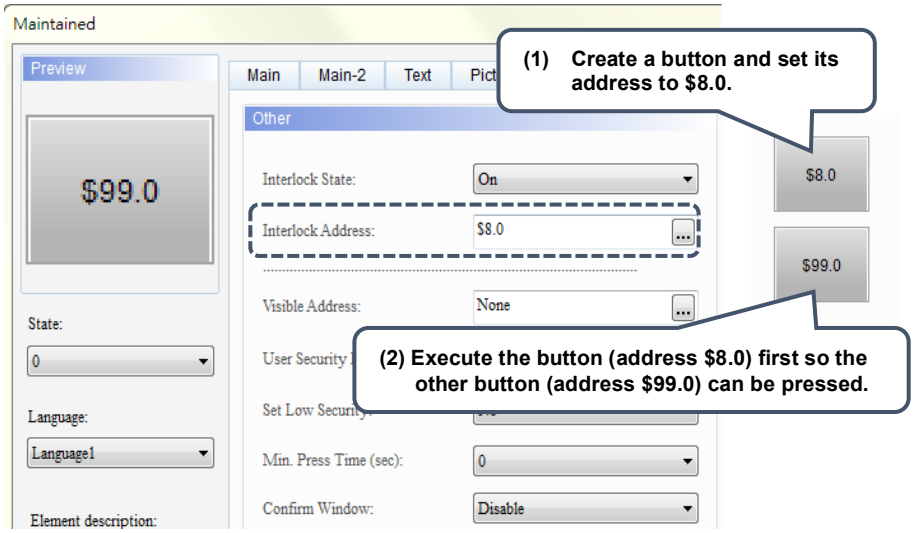
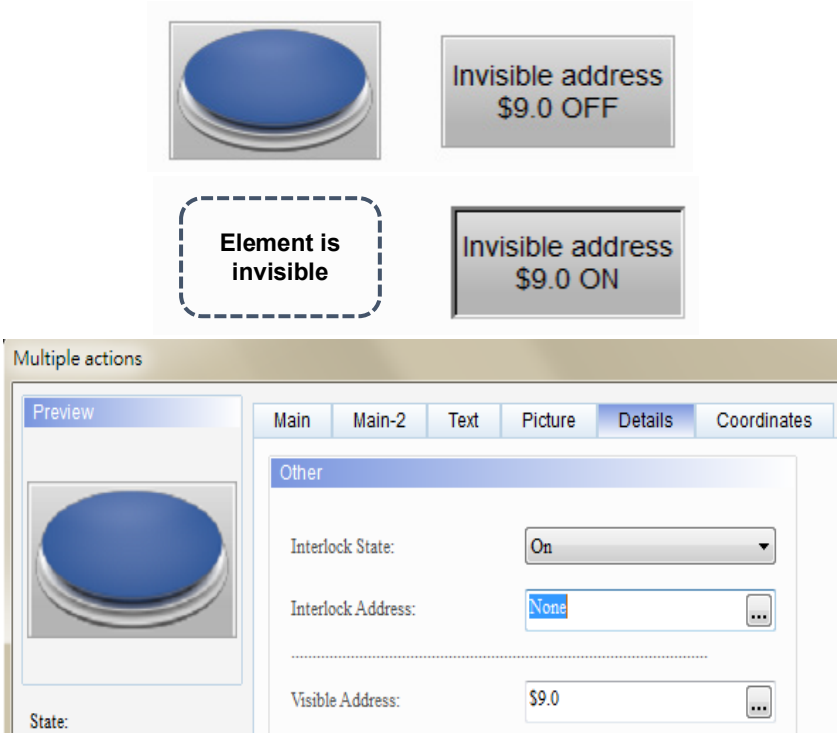
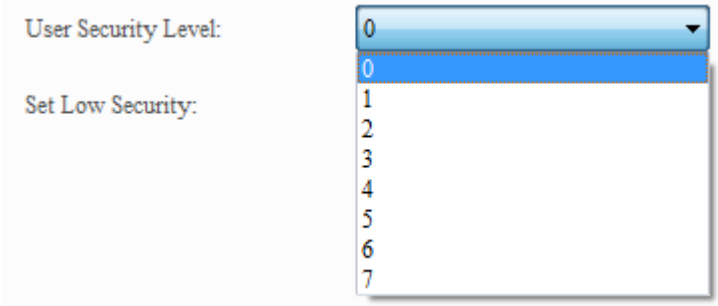
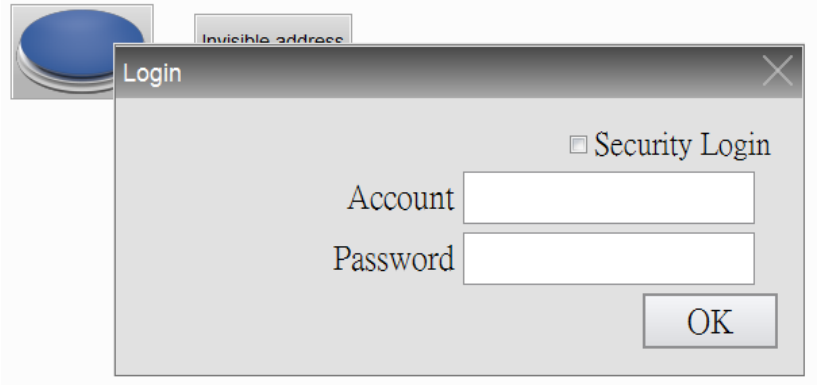


Figure 7.7 [Details] property page for multiple actions buttons

No.	Property	Function description
(1)	Interlock State Interlock Address	[Interlock Address] is for enabling the operation of another element and has to be used with [Interlock State]. If the [Interlock State] is set to off, it means the element operation is available when this interlock state is off; on the other hand, if it is set to on, the element operation is available when this interlock state is on. The following describes how it works: 1. Create a button and set its address to $8.0. Then, set the [Interlock Address] to $8.0 for the button which address is $99.0. 2. Before having the button which address is $99.0 to operate, you have to press the button which address is $8.0 to validate the button action which address is $99.0. 
(2)	Invisible Address	When [Invisible address] is set to on, the button element is invisible and you cannot execute its set functions. 

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td rowspan="2">(3)</td><td>User Security Level</td><td>■ This function sets the permission level for pressing the element; this operation is available to users with the set security level or higher.
■ After you set the user security level and press the element, a password input window pops up to confirm whether the security level password is correct (you can modify this password through the password table element, please refer to Section 5.7 Password Setting table of the DOP-100 user manual.
 

■ If you specify [Set Low Security] to “Yes”, each time you enter the password, the HMI sets the security level to the lowest. The next time you press the element, you will be asked to enter the password for the corresponding security level.
 
</td></tr>
<tr><td>Set Low Security</td></tr>
</table>

PLC1

■ Coordinates

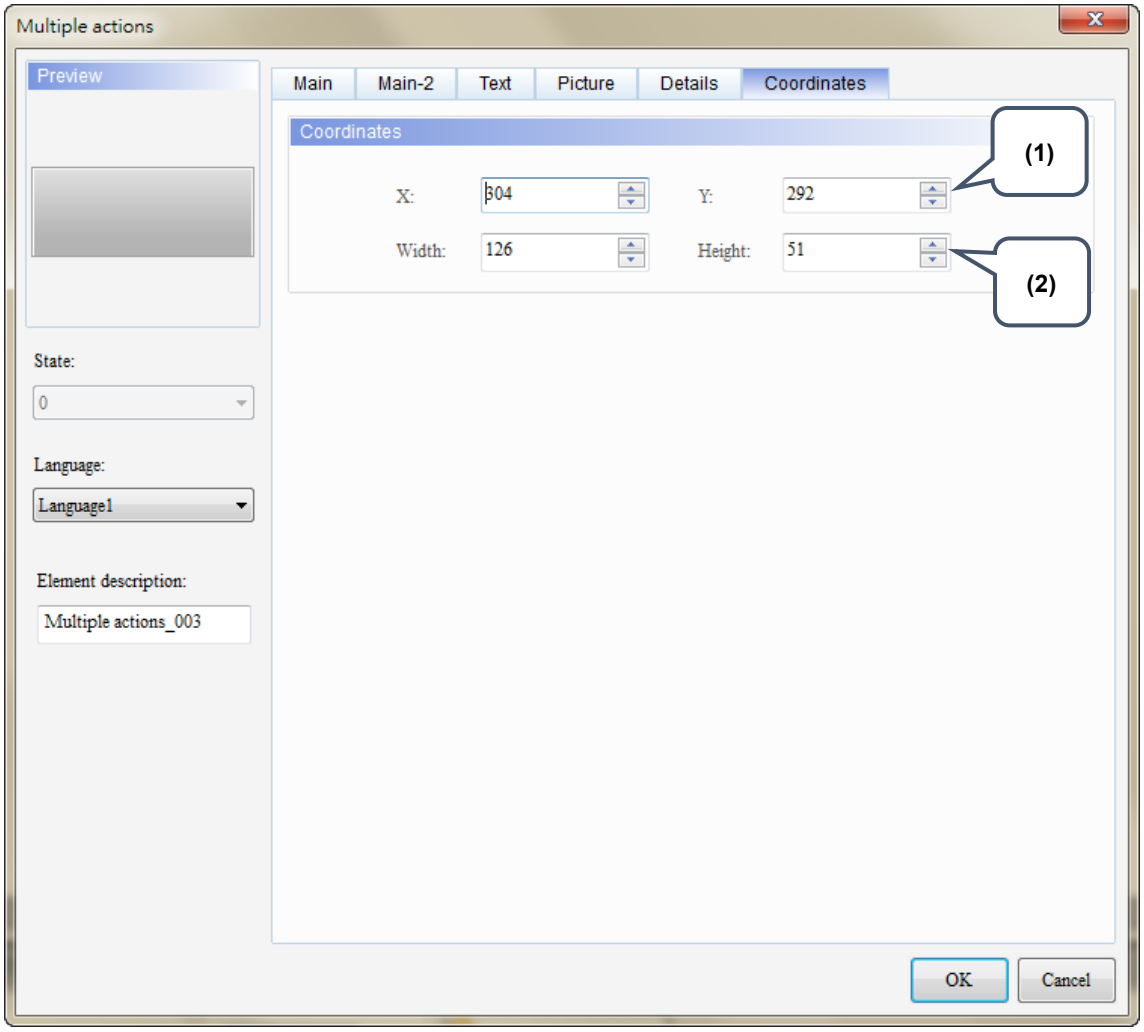


Figure 7.8 [Coordinates] property page for the Multiple Actions button element

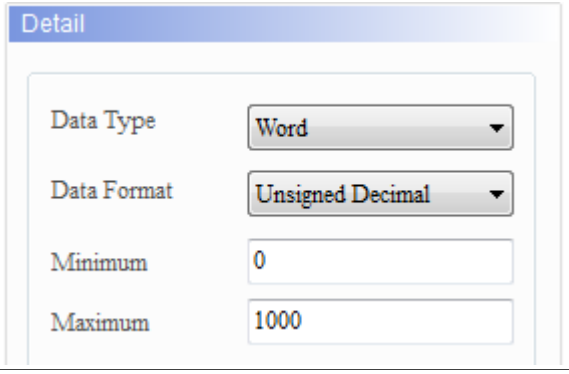
No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

8. Meter (1) / Meter (2) / Meter (3) / Meter (4)

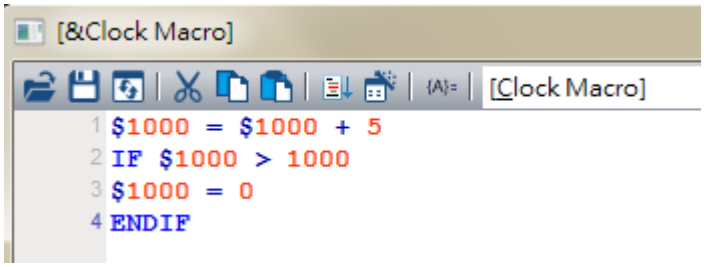
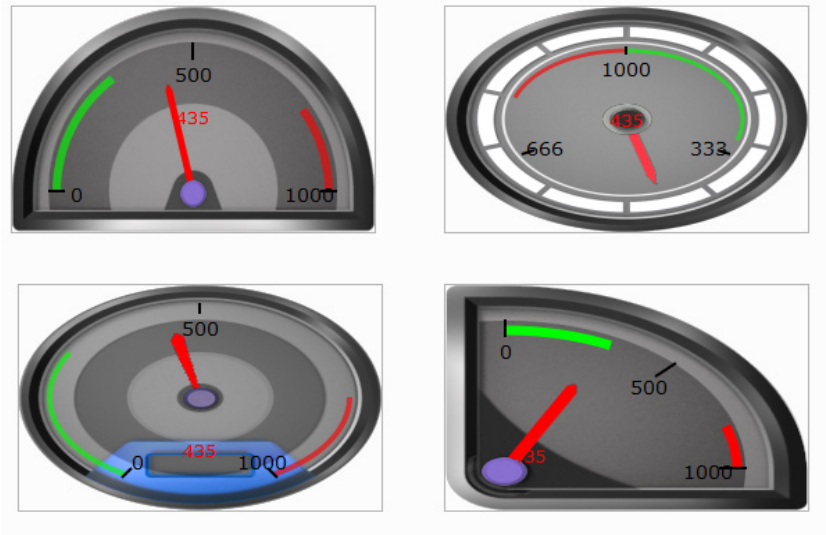
The software provides four styles of meters for displaying the measuring values of the set addresses as well as for showing whether the value reaches the upper or lower limit and the target value. In addition, you can define the memory address for the target value and high/low limit to make the application more flexible so it meets users' requirements. You can also specify the colors for the lower limit, upper limit, and target value for easier identification and viewing. Further, the meter elements have animation and anti-aliasing functions that makes the display smoother and more delicate.

Please refer to the example descriptions below.

Table 8.1 Example for Meter elements

<table>
<tr><th colspan="2">Meter (1) / Meter (2) / Meter (3)</th></tr>
<tr><td>Read Address</td><td>Create Meter (1), Meter (2), Meter (3), and Meter (4) elements and set their read addresses to $1000.
</td></tr>
<tr><td>Settings</td><td>
<table>
<tr><th>Data Type</th><th>Data Format</th><th>Minimum</th><th>Maximum</th></tr>
<tr><td>Word</td><td>Unsigned Decimal</td><td>0</td><td>1000</td></tr>
</table>


</td></tr>
</table>

<table>
<tr><th colspan="5">Meter (1) / Meter (2) / Meter (3)</th></tr>
<tr><td rowspan="3">Input value for activation range</td><td colspan="2">Low Limit Property</td><td colspan="2">High Limit Property</td></tr>
<tr><td>Low Range Color</td><td>Low Range Value</td><td>High Range Color</td><td>High Range Value</td></tr>
<tr><td></td><td>300</td><td></td><td>800</td></tr>
<tr><td>Screen Cycle Macro</td><td colspan="4"> 
</td></tr>
<tr><td>Execution results</td><td colspan="4">After finishing editing the screens, download them to the HMI. Then, the HMI executes the program in the screen cycle macro and displays the results in the corresponding addresses set for Meter elements.
 
</td></tr>
</table>

Functions for Meter (1), Meter (2), Meter (3), and Meter (4) are the same except the styles; therefore, the section below will only introduce Meter (1).

When you double-click the Meter element, the property page is shown as follows.

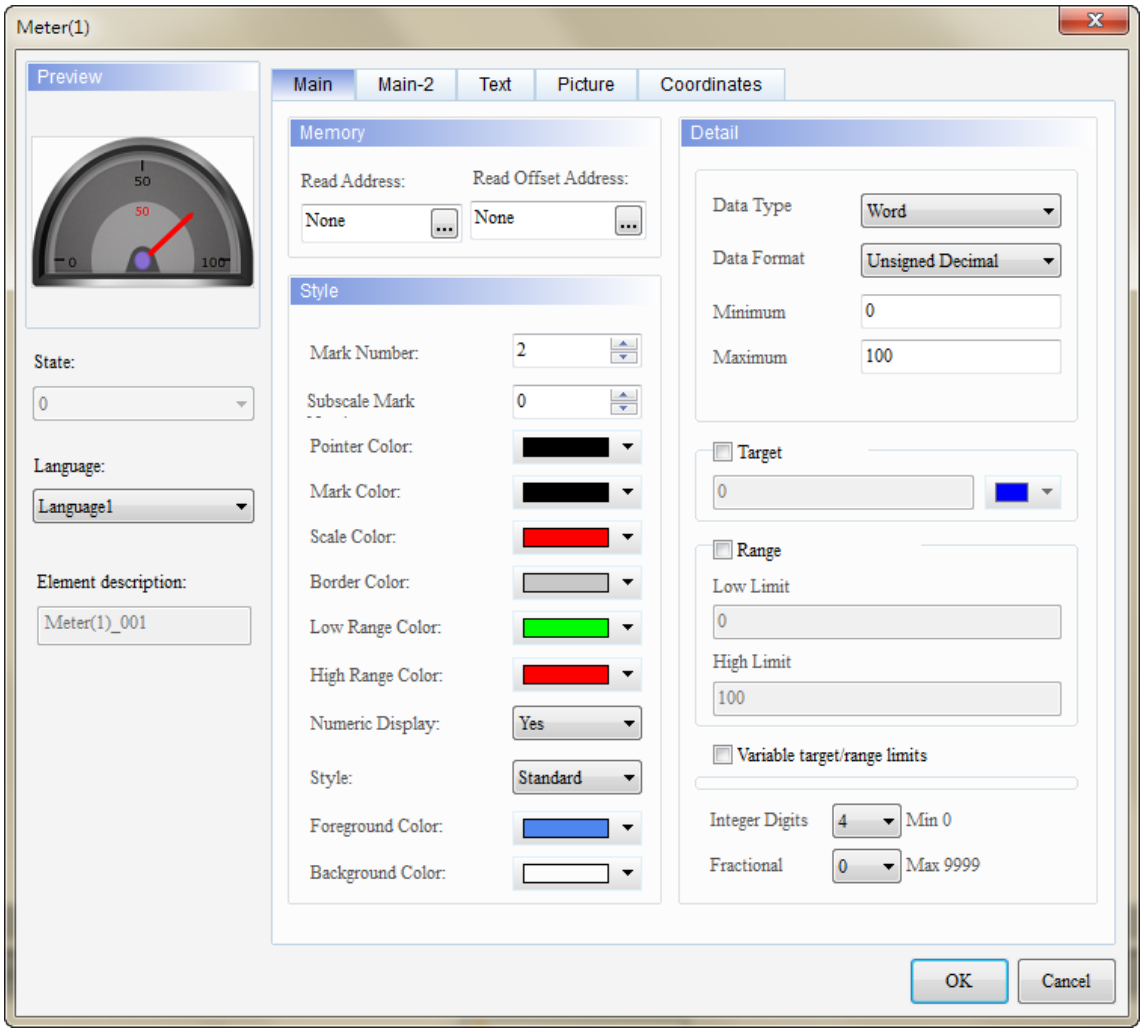


Figure 8.1 Meter element property

Table 8.2 Meter function page

Meter (1) / Meter (2) / Meter (3) / Meter (4)	
Function page	**Description**
Preview	Meter elements are only for viewing multi-language data display and have no multiple states.
Main	Set the read memory address, read offset address, element styles, foreground color, and background color. Set the mark number, sub-scale number, pointer color, mark color, scale color, border color, low range color, high range color, and value display. Set the element data type, data format, minimum / maximum input value. Set whether to display the target value and its color, input value for the activation range, variable target and high / low limits, integer digit, and decimal digit.
Main-2	Set the transparency value, enable animated graphics, and enable anti-aliasing function. Set the high / low range transparency, target value transparency, value color, and minify the scale.
Text	Set the displayed text content, font, size, color, format, zoom, and alignment.
Picture	Set to Picture Bank Mode or Template Pattern Mode.
Coordinates	Set the X and Y coordinates, width, and height of the element.

■ Main

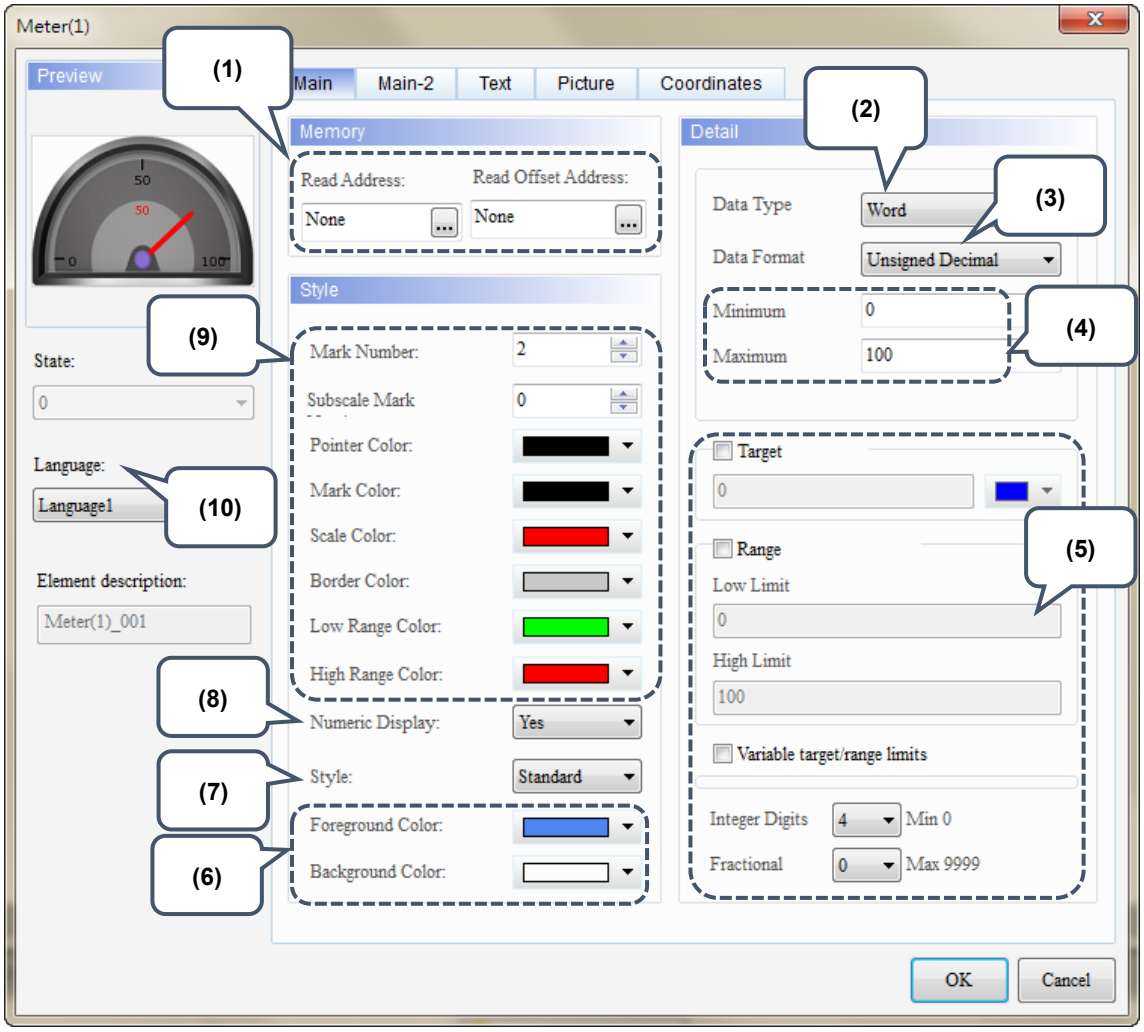
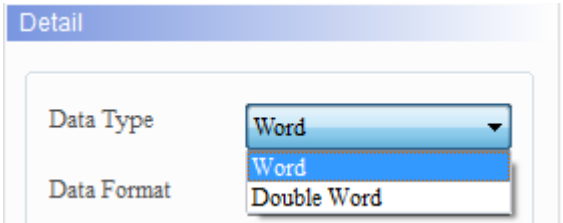
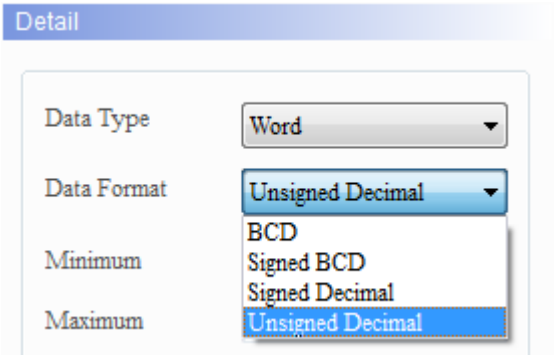
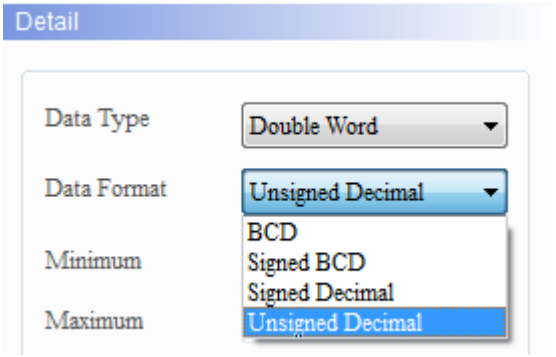


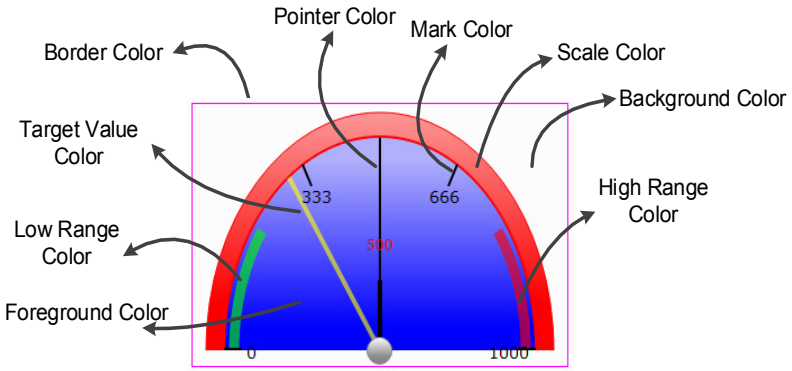
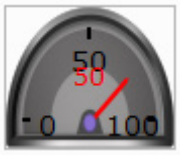
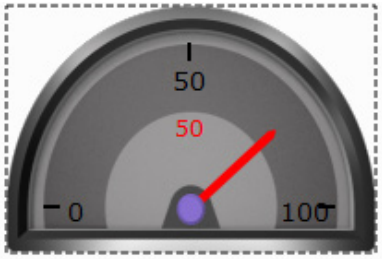
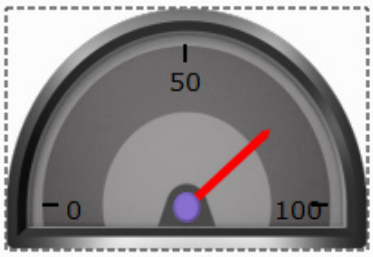
Figure 8.2 [Main] property page for Meter elements

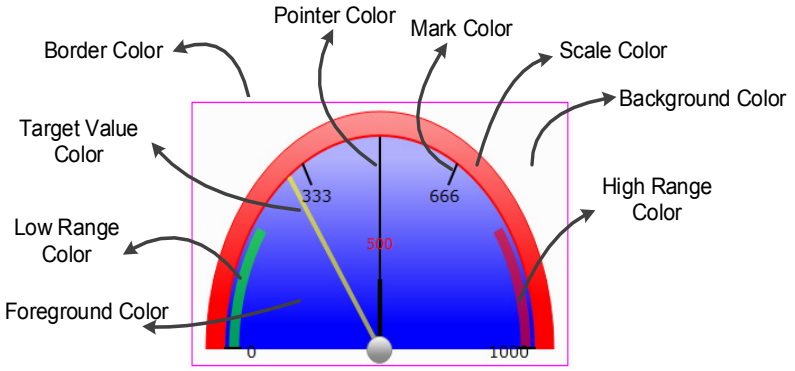
No.	Property	Function description
(1)	Read Address	■ You can choose internal memory address or controller register address. The input memory type has to be Word. ■ For information about selecting connection name or element types, please refer to Chapter 5 Button Element in the DOP-100 user manual.
	Read Offset Address	Please refer to Appendix D in the DOP-100 user manual for more details about read/write offset addresses.
(2)	Data Type	[Data type] includes Word and Double Word. 

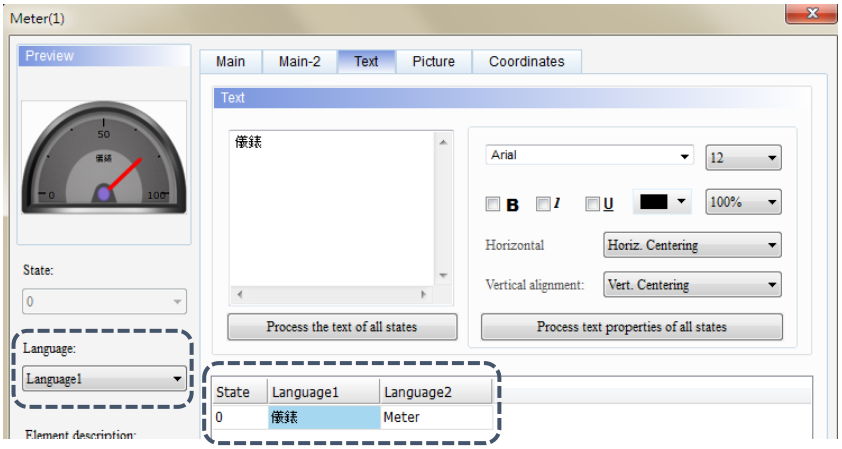
<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td>(3)</td><td>Data Format</td><td>■ When the data type is Word, the supported data formats are as follows:
 

■ When the data type is Double Word, the supported data formats are as follows:
 
</td></tr>
<tr><td>(4)</td><td>Minimum / maximum input value</td><td>The allowable ranges for the minimum and maximum values are subject to change based on the selected data type and data format.
<table>
<tr><th>Data Type</th><th>Data Format</th><th>Allowable range</th></tr>
<tr><td rowspan="4">Word</td><td>BCD</td><td>0 - 9999</td></tr>
<tr><td>Signed BCD</td><td>-999 - 999</td></tr>
<tr><td>Signed Decimal</td><td>-32768 - 32767</td></tr>
<tr><td>Unsigned Decimal</td><td>0 - 6553</td></tr>
<tr><td rowspan="4">Double Word</td><td>BCD</td><td>0 - 99999999</td></tr>
<tr><td>Signed BCD</td><td>-9999999 - 99999999</td></tr>
<tr><td>Signed Decimal</td><td>-2147483648 - 2147483647</td></tr>
<tr><td>Unsigned Decimal</td><td>0 - 4294967295</td></tr>
</table></td></tr>
<tr><td>(5)</td><td>Data Format</td><td>
<table>
<tr><td>Target</td><td>If the checkbox [Variable target / range limits] is unchecked, you can only enter a constant to define the displayed target value on the meter. You can also specify the displayed color.</td></tr>
<tr><td>Range</td><td>Enable the input value range including the lower and the upper limits. It is the same as the displayed target value. If the checkbox [Variable target/ range limits] is unchecked, you can only enter constants to define the lower and upper limits of the meter.</td></tr>
<tr><td>Variable target / range limits</td><td>If it is checked, you can define the memory addresses to dynamically change the target value, lower and upper limit values displayed.</td></tr>
<tr><td>Integer Digits</td><td rowspan="2">You can define how many digits the displayed integers and decimals can have.</td></tr>
<tr><td>Fractional Digits</td></tr>
</table></td></tr>
</table>

PLC1

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td>(6)</td><td>Foreground Color and Background Color</td><td>■ Sets the element foreground and background colors.
■ The element foreground color setting is only applicable to the Picture Bank mode of the [Picture] page.
 
</td></tr>
<tr><td>(7)</td><td>Style</td><td>The [Style] setting includes Standard, Raised, Sunken, and Transparent. This setting allows users to change the element appearance.
<table>
<tr><th>Standard</th><th>Raised</th><th>Sunken</th><th>Transparent</th></tr>
<tr><td> 
</td><td>
</td><td>
</td><td>
</td></tr>
</table></td></tr>
<tr><td>(8)</td><td>Numeric Display</td><td>Display the value acquired by the meter.
<table>
<tr><td>Select Yes for [Numeric Display]</td><td> 
</td></tr>
<tr><td>Select No for [Numeric Display]</td><td> 
</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td>(9)</td><td>Style</td><td>


<table>
<tr><td>Mark Number</td><td>The minimum mark number must be no less than 1 and the maximum is up to 10.</td></tr>
<tr><td>Subscale Mark Number</td><td>The minimum subscale number can be 0 and the maximum is up to 99.</td></tr>
<tr><td>Pointer Color</td><td>You can define the pointer color to be displayed.
Pointer color setting is only applicable to the Picture Bank Mode of the [Picture] page.</td></tr>
<tr><td>Mark Color</td><td>You can define the mark color to be displayed.</td></tr>
<tr><td>Scale Color</td><td>You can define the scale color to be displayed.
Scale color setting is only applicable to the Picture Bank Mode of the [Picture] page.</td></tr>
<tr><td>Border Color</td><td>You can define the border color to be displayed.</td></tr>
<tr><td>Low Range Color</td><td>You can define the low range color to be displayed.</td></tr>
<tr><td>High Range Color</td><td>You can define the high range color to be displayed.</td></tr>
</table>
</td></tr>
<tr><td>(10)</td><td>Language</td><td>When you have set multi-language data, you can use the language used for the element to edit the displayed text properties, etc.


</td></tr>
</table>

■ Main-2

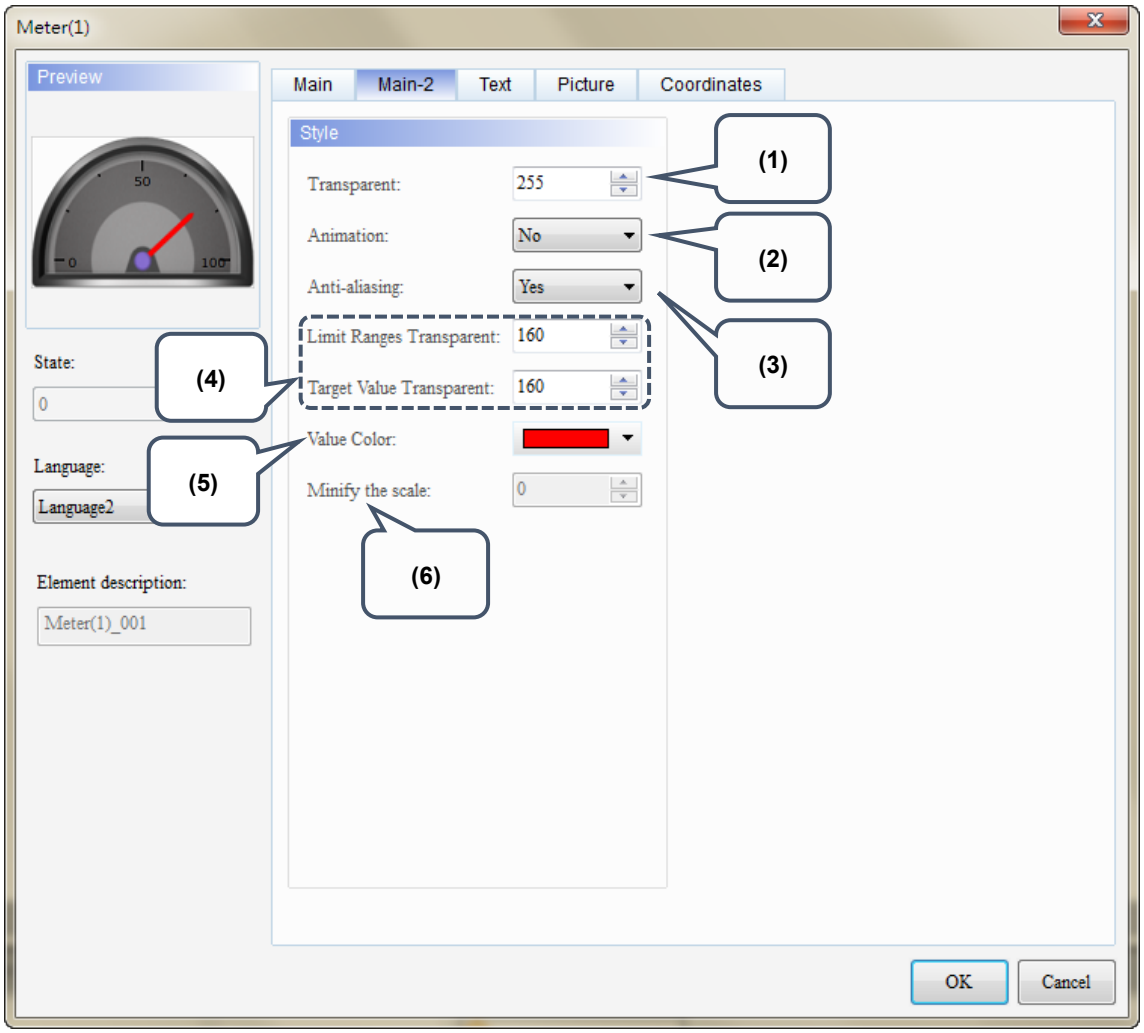
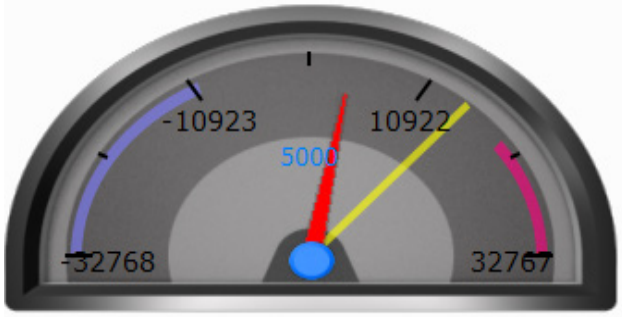
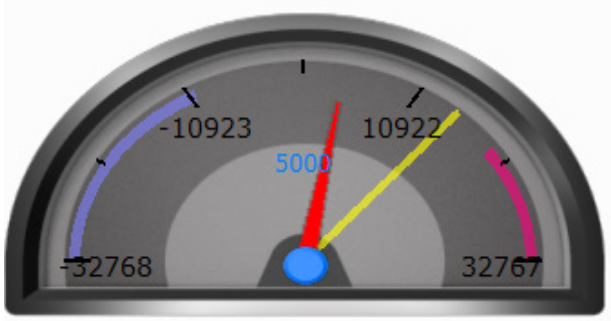
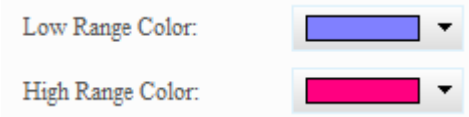
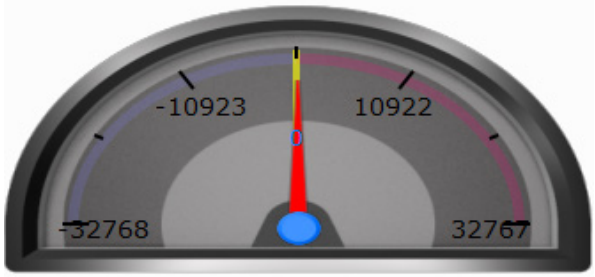
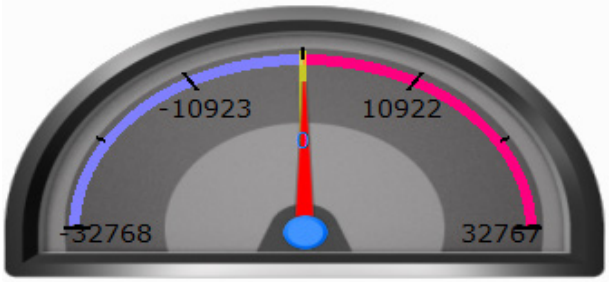
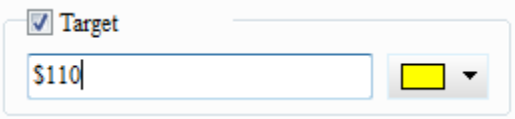
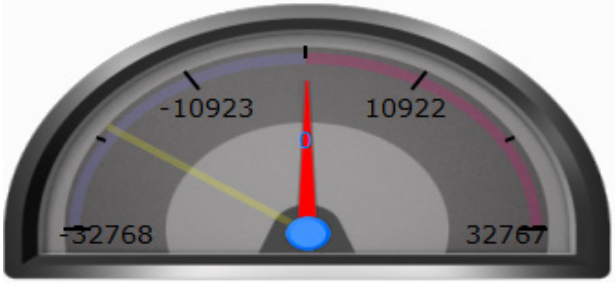
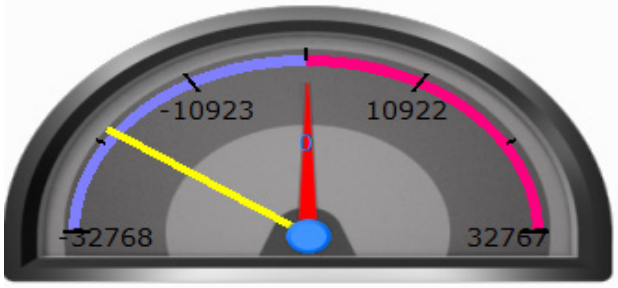
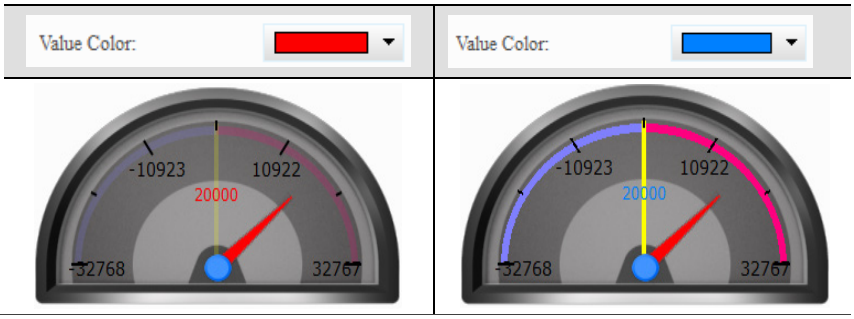
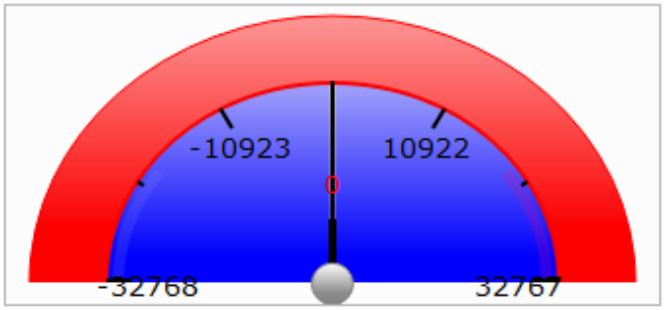
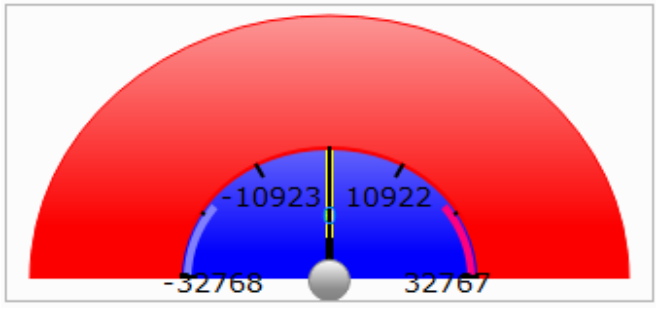


Figure 8.3 [Main-2] property page for the Meter elements

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255.The smaller the value, the higher the transparency of the element.
(2)	Animation	■ Use the animated graphic function for this element. ■ When enabled, the pointer motion becomes smoother.
(3)	Anti-aliasing	■ Use the anti-aliasing function for this element. ■ When enabled, the element display becomes more delicate without jagged edges. Enabled (select **Yes**) 

<table>
<tr><th>No.</th><th>Property</th><th colspan="2">Function description</th></tr>
<tr><td></td><td></td><td>Disabled
(select No)</td><td> 
</td></tr>
<tr><td rowspan="4">(4)</td><td rowspan="2">Limit Ranges Transparent</td><td colspan="2">You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.</td></tr>
<tr><td>Limit Ranges Color</td><td> 
</td></tr>
<tr><td>[Limit Ranges Transparent] is set to 50</td><td> 
</td></tr>
<tr><td>[Limit Ranges Transparent] is set to 255</td><td> 
</td></tr>
<tr><td rowspan="3">Target Value Transparent</td><td colspan="2">You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.</td></tr>
<tr><td>Target Value Color</td><td> 
</td></tr>
<tr><td>[Target Value Transparent] is set to 50</td><td> 
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td></td><td></td><td>[Target Value Transparent] is set to 255
 
</td></tr>
<tr><td>(5)</td><td>Value Color</td><td>Display the value acquired by the meter.
 
</td></tr>
<tr><td>(6)</td><td>Minify the Scale</td><td>■ This function is only applicable to the Picture Bank Mode in the [Picture] page.
■ The allowable setting range is 0 - 8.
■ The greater the value is, the longer distance the scale mark to the meter edge will be.
Minify the scale to 3
 

Minify the scale to 8
 
</td></tr>
</table>

■ Text

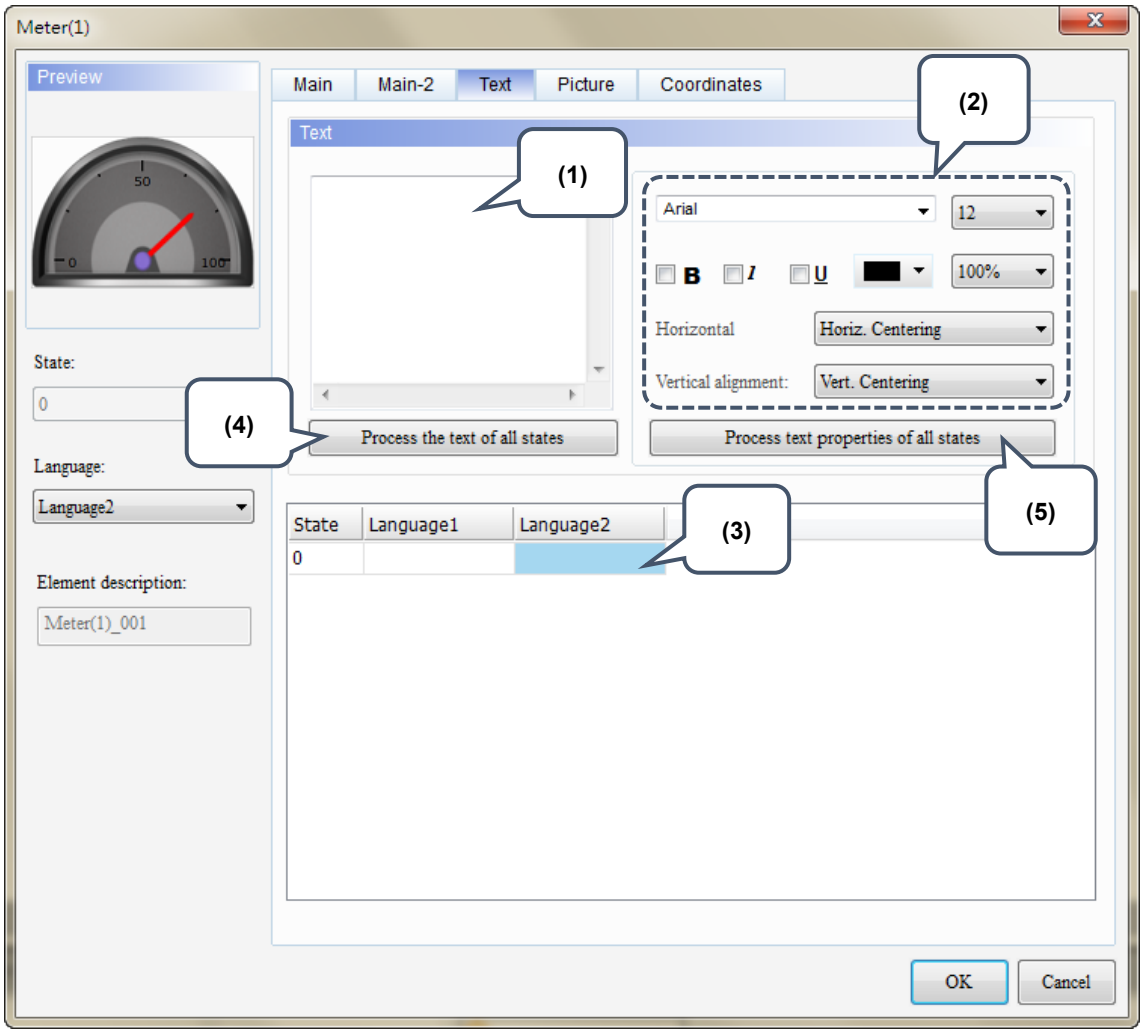
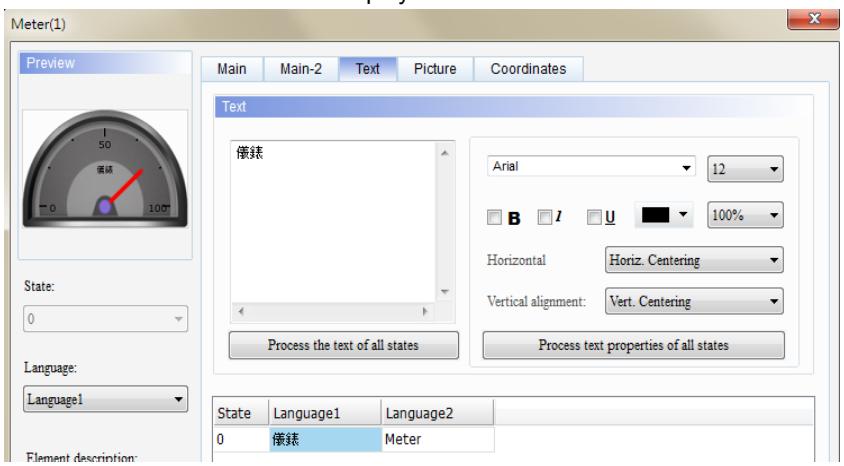
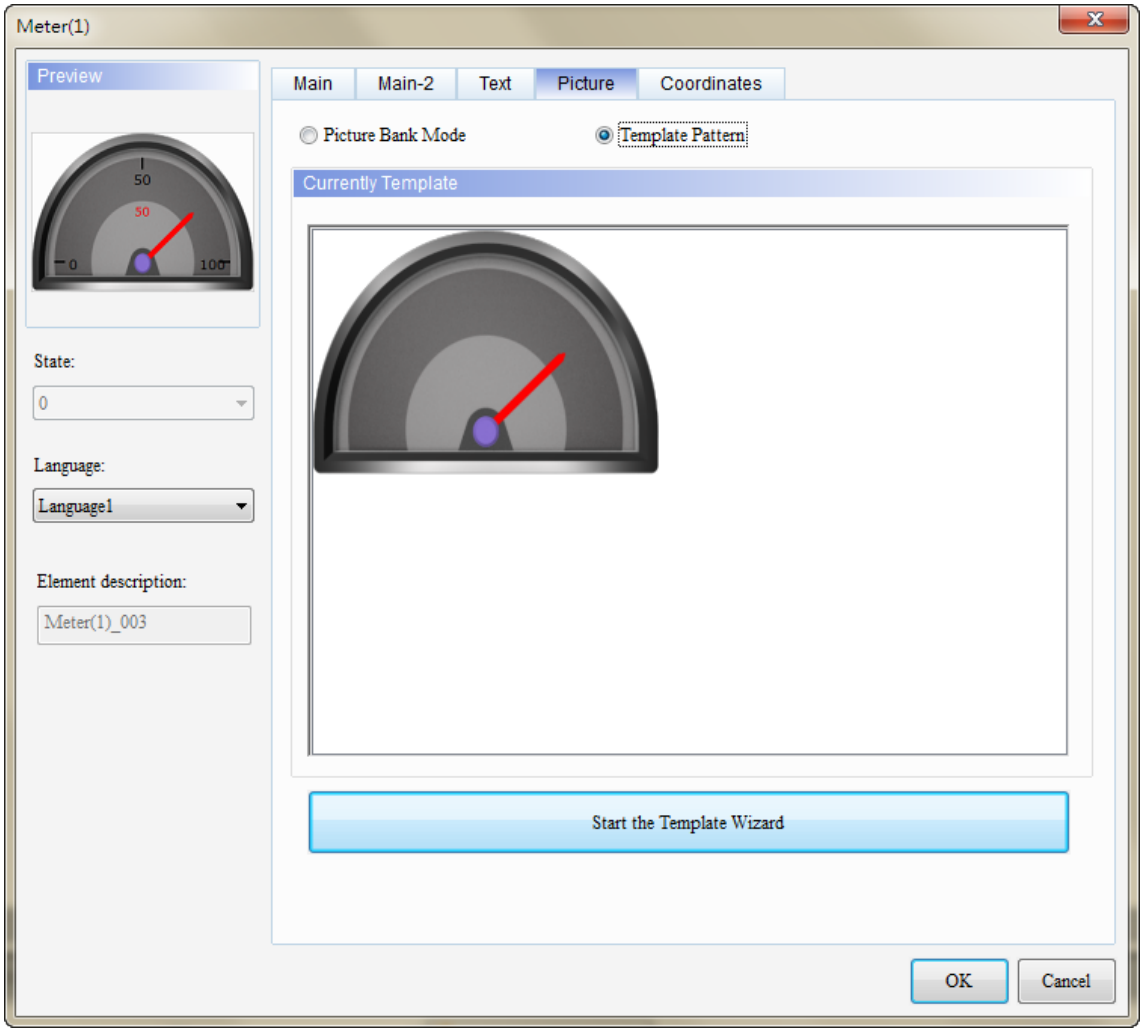


Figure 8.4 [Text] property page for Meter elements

No.	Property	Function description
(1)	Text	■ You can enter the text to display in this box.  ■ As long as the element allows text input, you can click the element on the screen and press the space key to promptly start editing the text.
(2)	Text Property	Set the text properties, including the font, size, color, zoom, alignment, and bold / italic / underline for the text. You can refer to the Preview section in the figure above for the text property setting results.

No.	Property	Function description
(3)	Edit Multi-language Text	If you have added multi-language text, the [Text] page allows you to edit multi-language data (shown in the figure of text property); you can enter contents in English in the English column.
(4)	Process the text of all states	Meter elements have only one state, so this function is not applicable.
(5)	Process text properties of all states	Meter elements have only one state, so this function is not applicable.

■ Picture


Meter(1)
Preview
50
50
0
100
State:
0
Language:
Language1
Element description:
Meter(1)_003
Main
Main-2
Text
Picture
Coordinates
Picture Bank Mode
Template Pattern
Currently Template
Start the Template Wizard
OK
Cancel

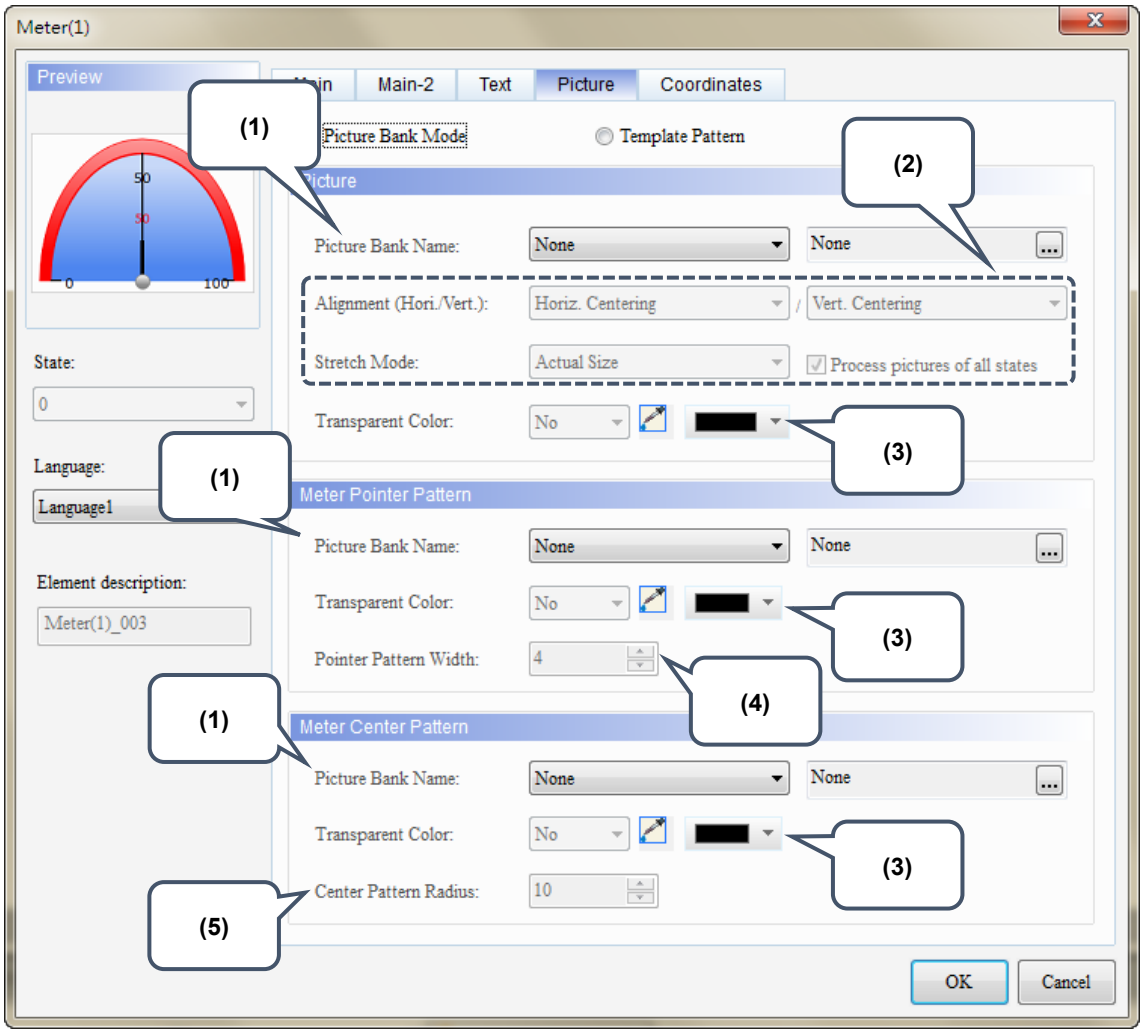


Figure 8.5 [Picture] property page for Meter elements

The [Picture] page has two modes, one is [Template Pattern] and the other is [Picture Bank Mode]. When you create meter elements, the default is the Template Pattern Mode, but you can select the display mode as required.

In Template Pattern mode, you can use the Template Wizard to define the meter template.

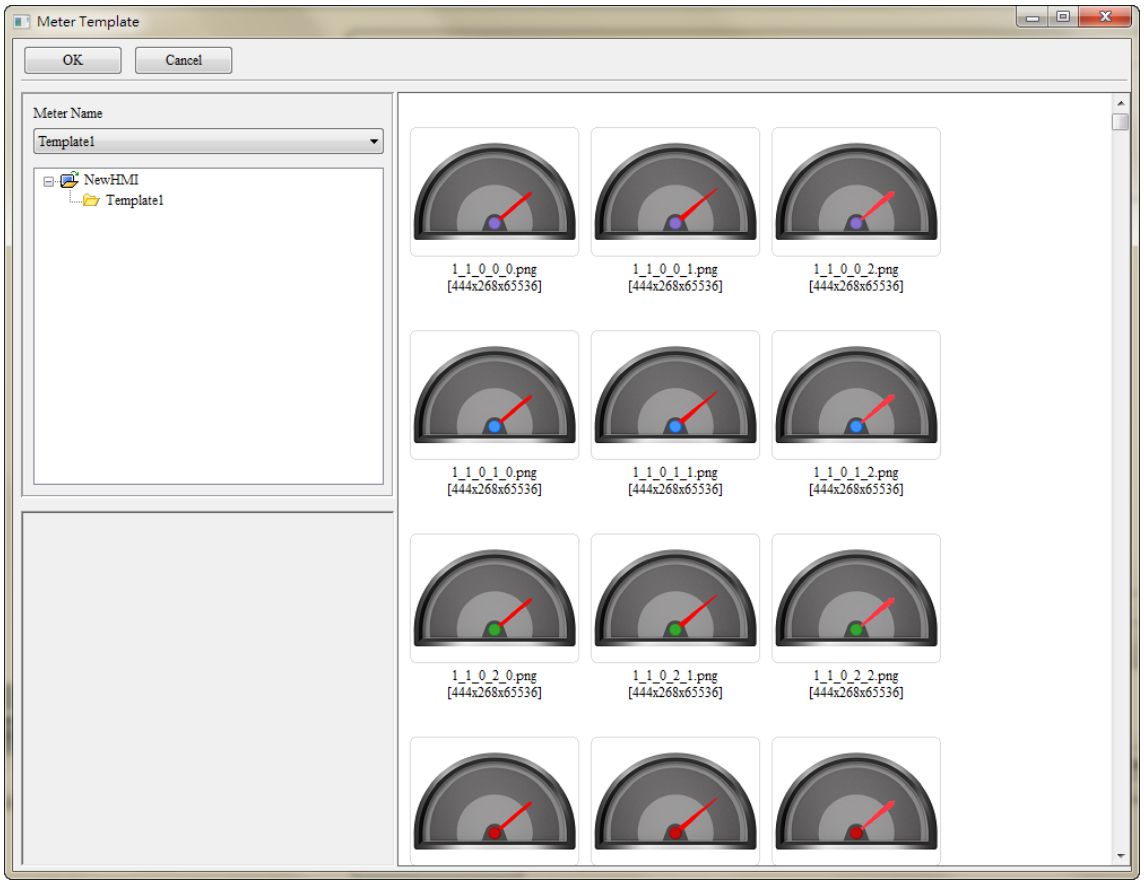
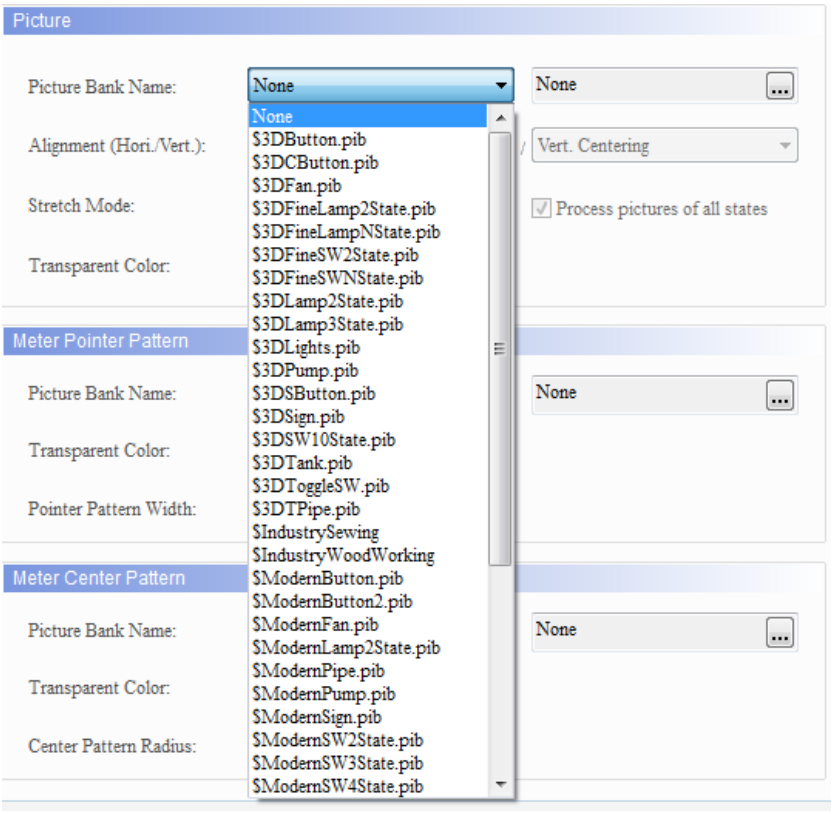
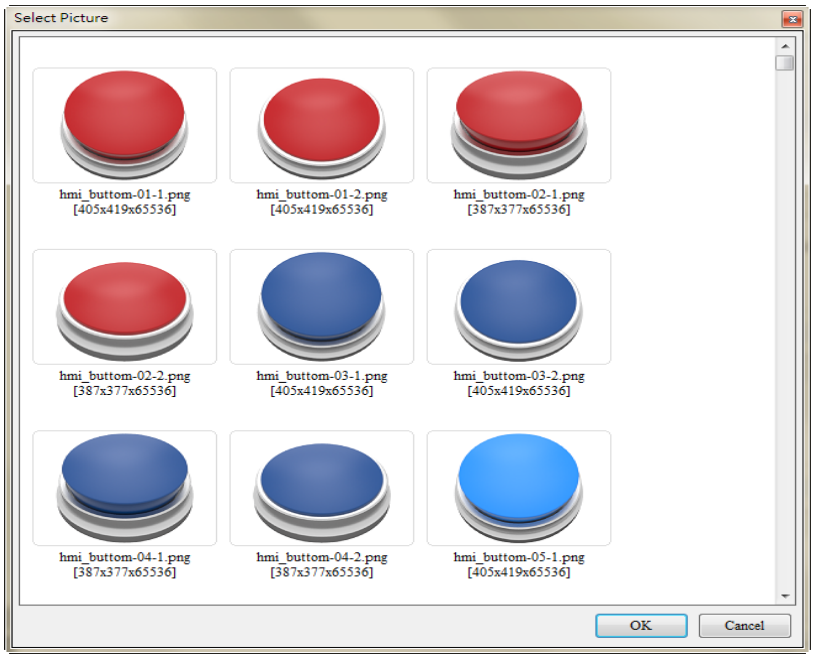
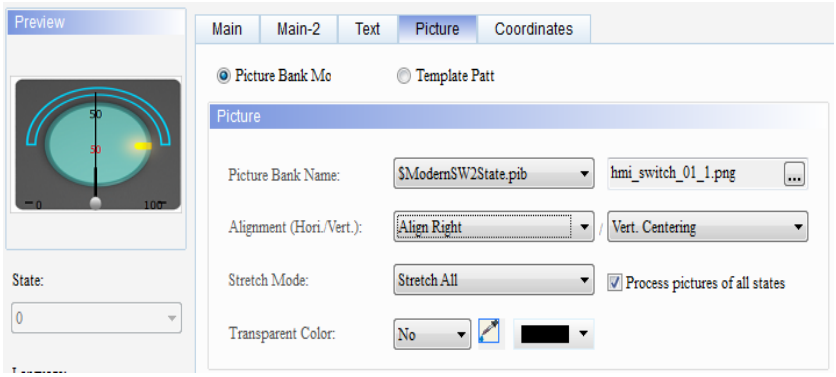
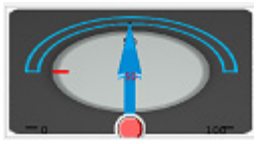
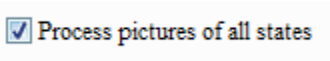
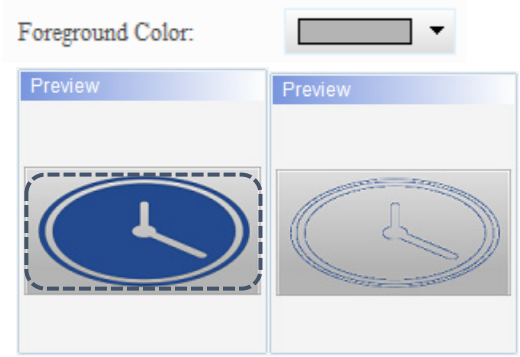


Figure 8.6 Meter element patterns - Template Wizard

No.	Property	Function description
(1)	Picture Bank Name	■ The default for [Picture Bank Name] is “None”. To set the picture display, use the drop-down list to view the picture bank provided by the software and then select the desired pictures. ■ [Meter] provides patterns of meters, meter pointers, and meter centers, which allows users to choose from the picture bank.  

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td rowspan="2">(2)</td><td>Alignment</td><td>■ You can use the alignment options to set how pictures are aligned.
 

■ The Stretch Mode options include [Stretch All], [Stretch 1:1], and [Actual Size].
<table>
<tr><th>Stretch All</th><th>Stretch 1:1</th><th>Actual Size</th></tr>
<tr><td>If you select [Stretch All], the picture fills the full element display area.</td><td>If you select [Stretch 1:1], the picture displays in 1:1 size based on the element width and length.</td><td>If you select [Actual Size], regardless of the element size, the picture displays in actual size in the element display area.</td></tr>
<tr><td>  </td><td> </td><td> </td></tr>
</table>
■ If you select [Process pictures of all states], assume that the elements have multiple states and some pictures do not fill the full element display area, you can use this function to process all pictures instead of setting them one by one, which saves the editing time.
 
</td></tr>
<tr><td>Stretch Mode</td><td></td></tr>
<tr><td>(3)</td><td>Transparent Color</td><td>■ Specifies a color in the picture and turn this color into transparent. is for selecting the transparent color. If you select the blue part in the clock, the software changes the blue parts into transparent, which color is identical to the element foreground color.
 
</td></tr>
<tr><td>(4)</td><td>Pointer Pattern Width</td><td>The default is 4. The setting range is 1 - 21.</td></tr>
<tr><td>(5)</td><td>Center Pattern Radius</td><td>The default is 10. The setting range is 1 - 53.</td></tr>
</table>

■ Coordinates

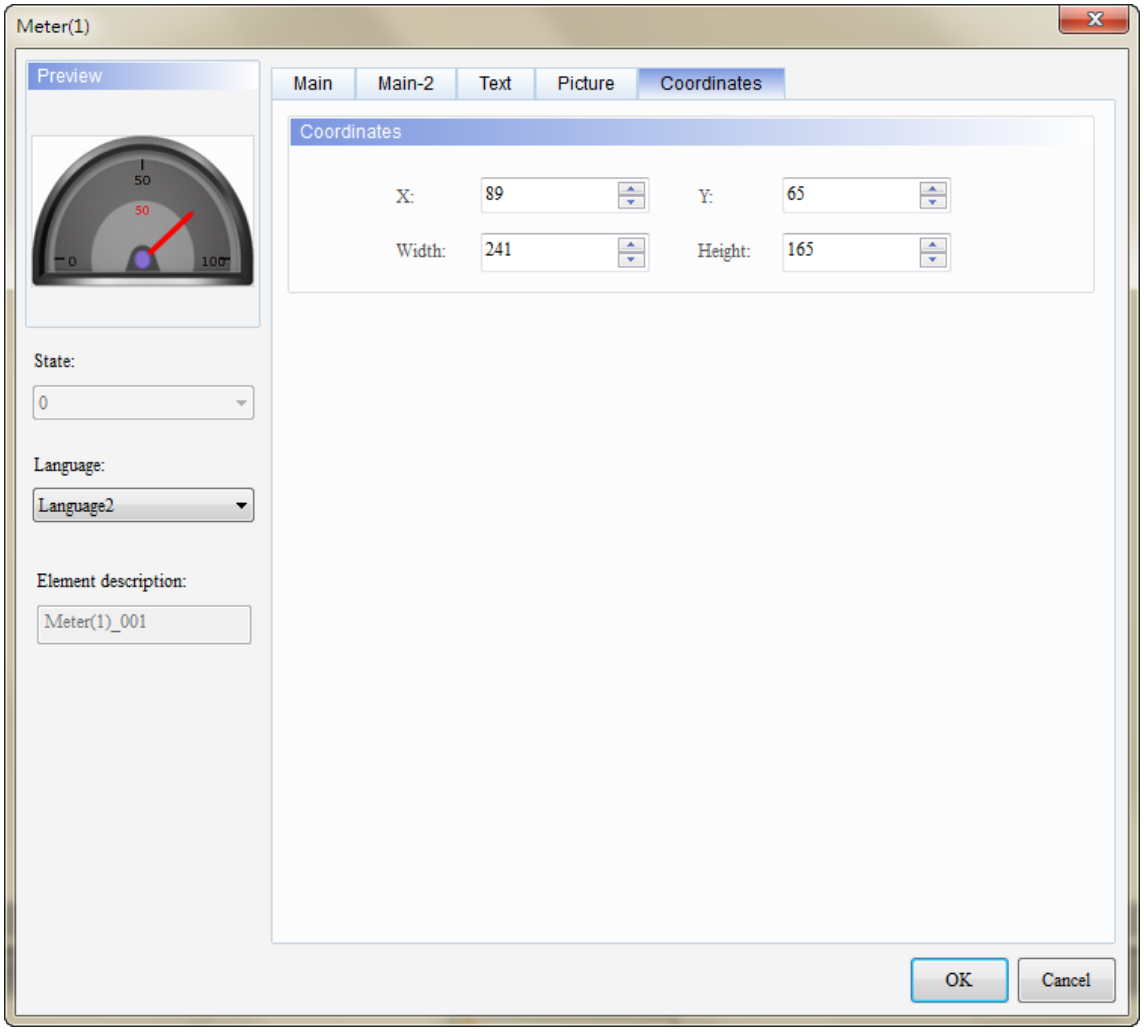


Figure 8.6 [Coordinates] property page for meter elements

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

9. Unit Conversion Settings

[Unit Conversion Settings] is only applicable to numeric display and numeric entry elements. Since the used units vary in different countries, you can use this function to convert the units.

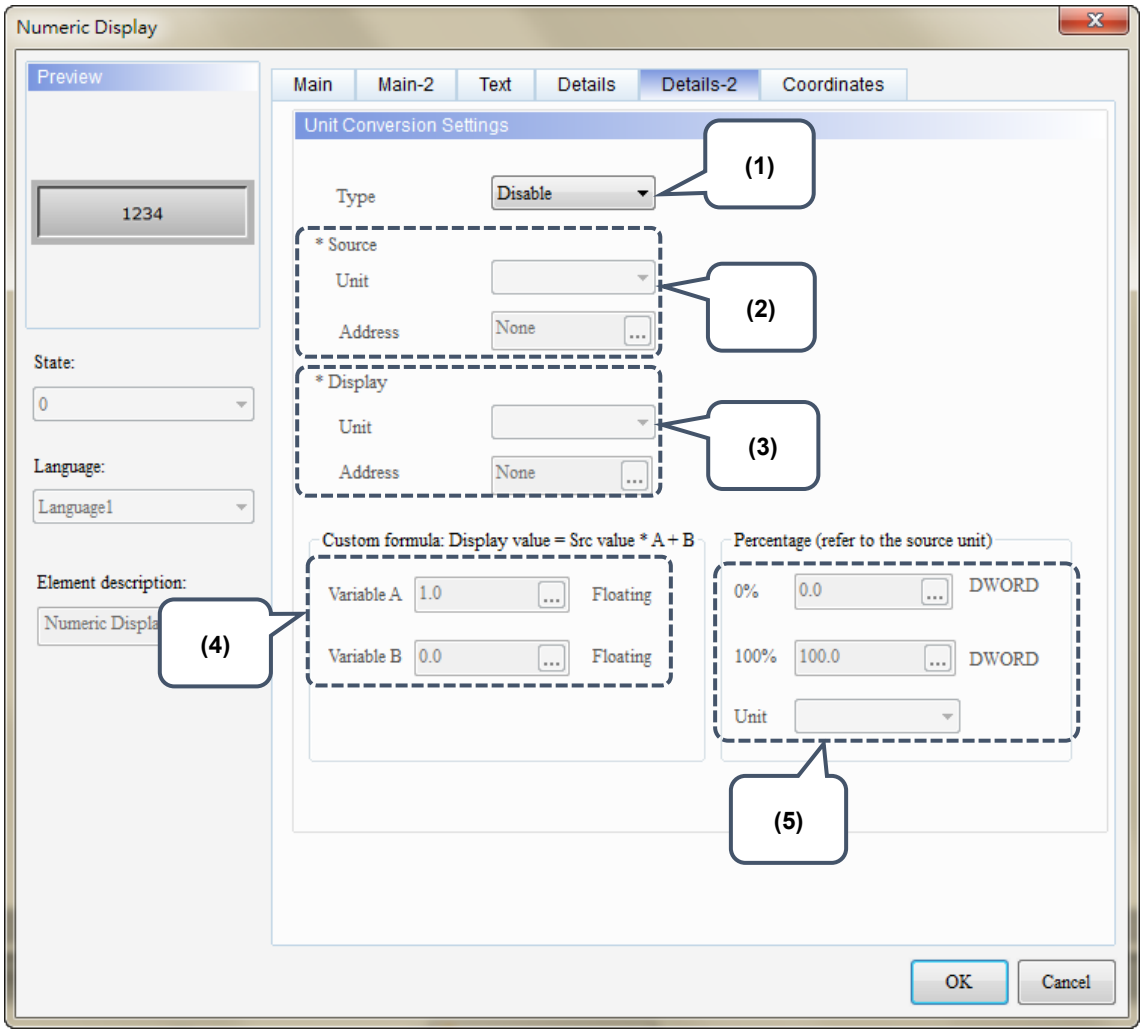
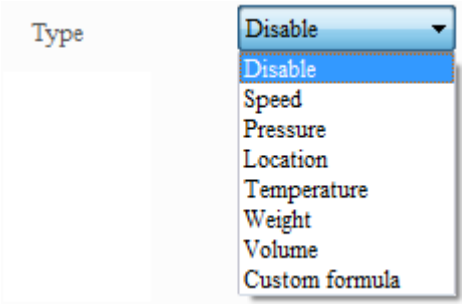
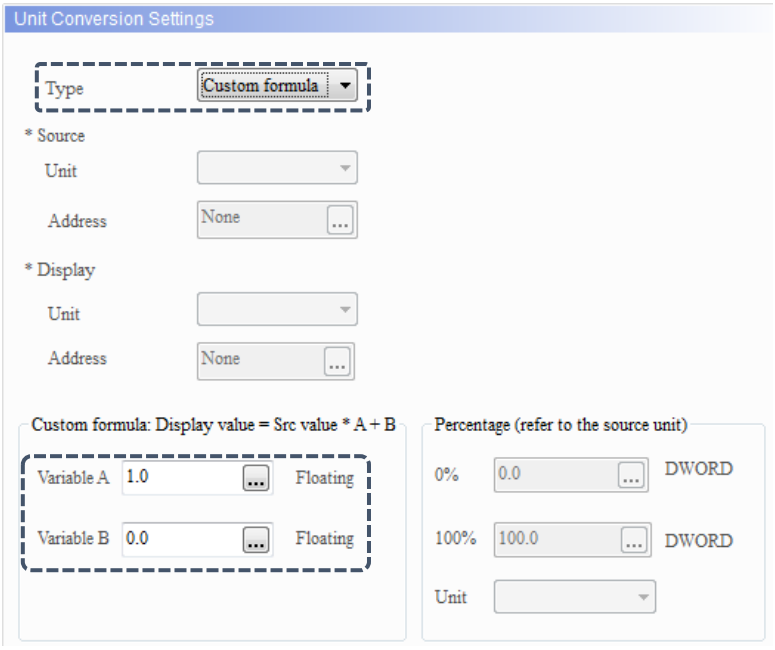


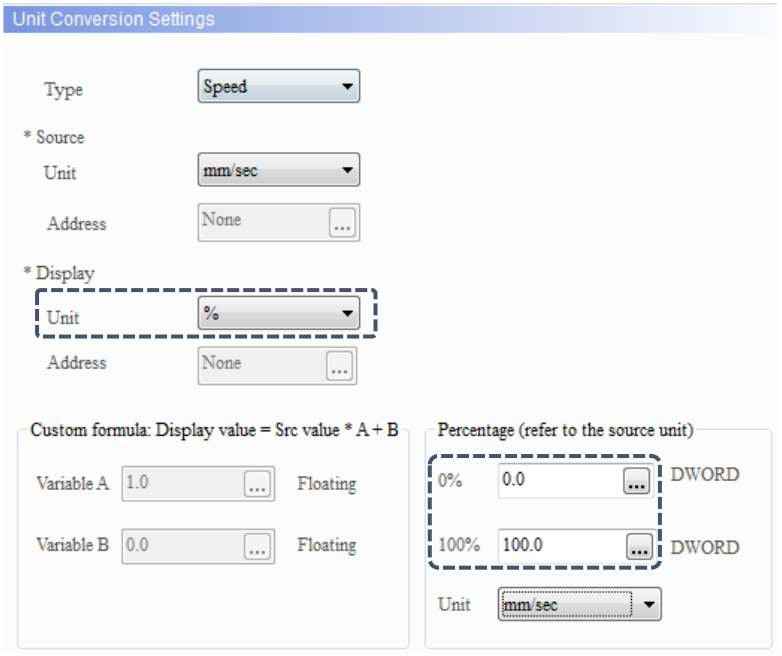
Figure 9.1 [Details-2] property page for Numeric Display elements

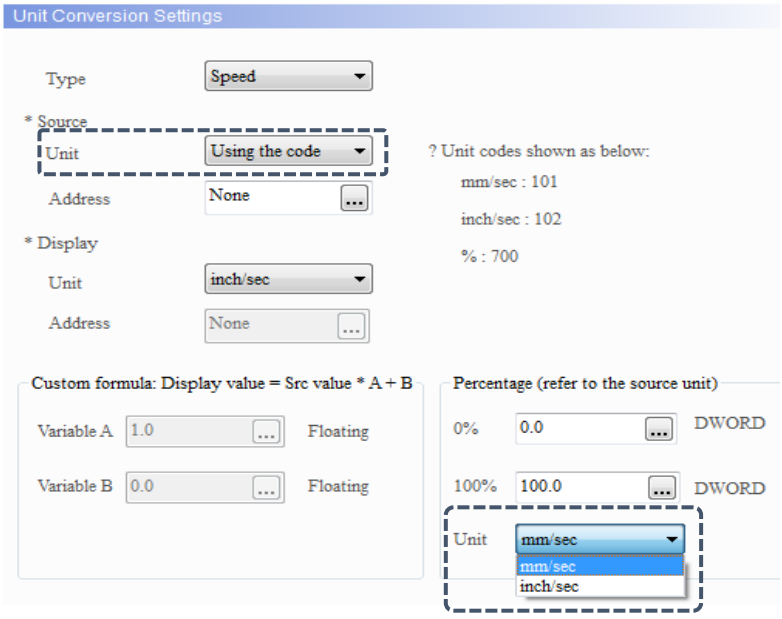
No.	Property	Function description
(1)	Type	■ You can select the conversion type, including speed, pressure, position, temperature, weight, capacity, and custom formula.  ■ If you select “Disable”, it means the value does not need conversion. ■ To set the custom formula, you have to enter values for Variable A and Variable B. When you select “Floating” for [Unit], the formula is [**Display value = Source value * A + B].** 

<table>
<tr><th>No.</th><th>Property</th><th colspan="2">Function description</th></tr>
<tr><td rowspan="18">(2)</td><td rowspan="18">Source</td><td rowspan="18">Unit</td><td>The unit is subject to change based on the selected type.
The table below lists the corresponding unit for each type.
<table>
<tr><th>Type</th><th>Unit</th></tr>
<tr><td rowspan="4">Speed</td><td>mm/sec</td></tr>
<tr><td>inch/sec</td></tr>
<tr><td>%</td></tr>
<tr><td>Code</td></tr>
<tr><td rowspan="4">Pressure</td><td>kg/cm</td></tr>
<tr><td>bar</td></tr>
<tr><td>%</td></tr>
<tr><td>Code</td></tr>
<tr><td rowspan="4">Coordinates</td><td>mm</td></tr>
<tr><td>inch</td></tr>
<tr><td>%</td></tr>
<tr><td>Code</td></tr>
<tr><td rowspan="4">Temperature</td><td>°F</td></tr>
<tr><td>°C</td></tr>
<tr><td>%</td></tr>
<tr><td>Code</td></tr>
<tr><td rowspan="6">Weight</td><td>ton</td></tr>
<tr><td>kN</td></tr>
<tr><td>g</td></tr>
<tr><td>oz</td></tr>
<tr><td>%</td></tr>
<tr><td>Code</td></tr>
<tr><td rowspan="5">Capacity</td><td>L</td></tr>
<tr><td>ml</td></tr>
<tr><td>kL</td></tr>
<tr><td>%</td></tr>
<tr><td>Code</td></tr>
</table></td></tr>
</table>

No.	Property	Function description
(2)	Source	Unit

■ When you select percentage (%) or the code as the unit for either the source or display, the percentage setting interface is enabled. When the percentage setting interface allows data input, you need to define values for 0% and 100% which unit setting refers to the source.



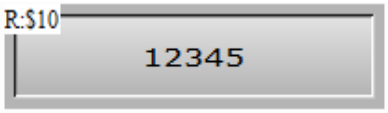
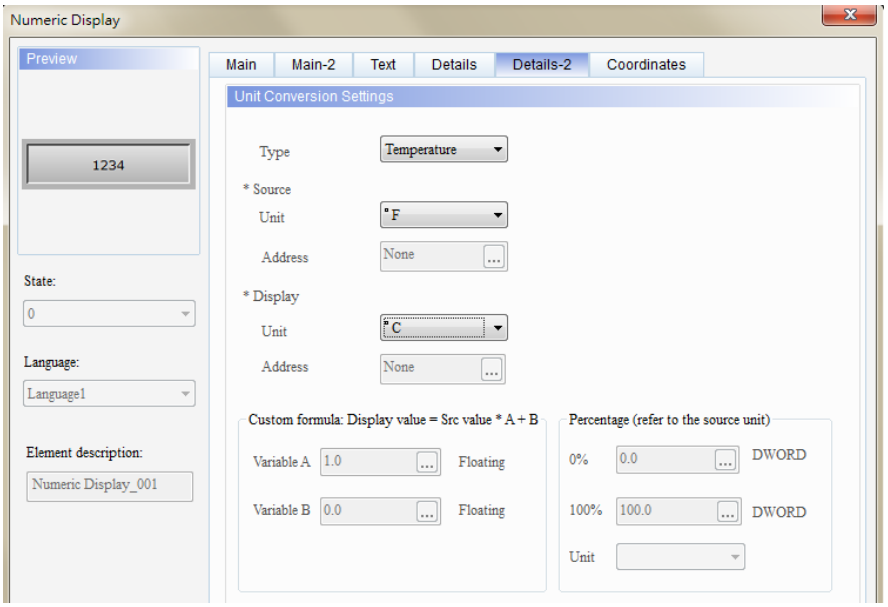


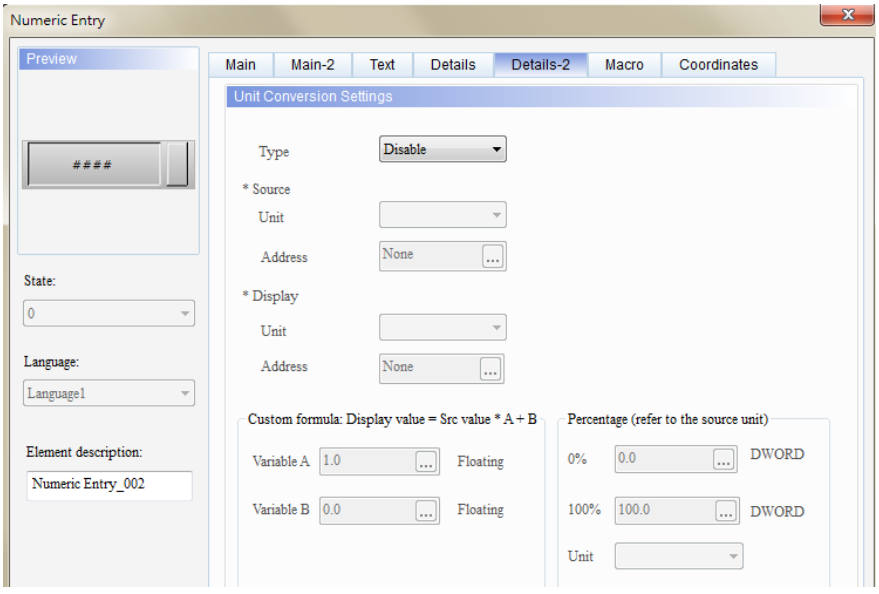
■ When you select “Code” as the unit, it means you can enter variables to specify the unit codes for the source and display. The unit codes are as follows:

Type	Unit	Code
Speed	mm/sec	101
	inch/sec	102
	%	700
Pressure	kg/cm	201
	bar	202
	%	700
Position	mm	301
	inch	302

No.	Property	Function description			
				%	700
			Temperature	°F	401
				°C	402
				%	700
			Weight	ton	501
				kN	502
				g	503
				oz	504
				%	700
			Capacity	L	601
				ml	602
				kL	603
				%	700
(3)	Display	Unit	Please refer to the source description.		
		Address	■ User-defined address is only available when you select the “Using the code” for the [Unit] option. ■ If both the source and display use code as the unit, do not use the same address.		
(4)	Custom formula	Variable A	■ You can input external / internal memory addresses and constants for both [Variable A] and [Variable B]. ■ To set the custom formula, you have to enter values for Variable A and Variable B. If you select “Floating” for [Unit], the formula is [Display value = Source value * A + B].		
		Variable B			
(5)	Percentage settings	0%	■ You can input external / internal memory addresses and constants for the setting values of 0% and 100%. ■ When either the source or display selects percentage (%) or the code as the unit, the percentage setting interface is enabled.		
		100%			
		Unit	It is subject to change based on the source unit setting. Take speed setting for example, if you select percentage (%) or code as the source unit, you can use the drop-down list in the percentage setting, which available options are mm/sec and inch/sec; if you select mm/sec for [Source], the percentage setting unit can only be mm/sec.		

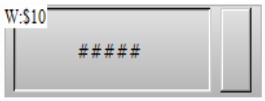
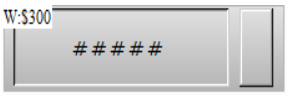
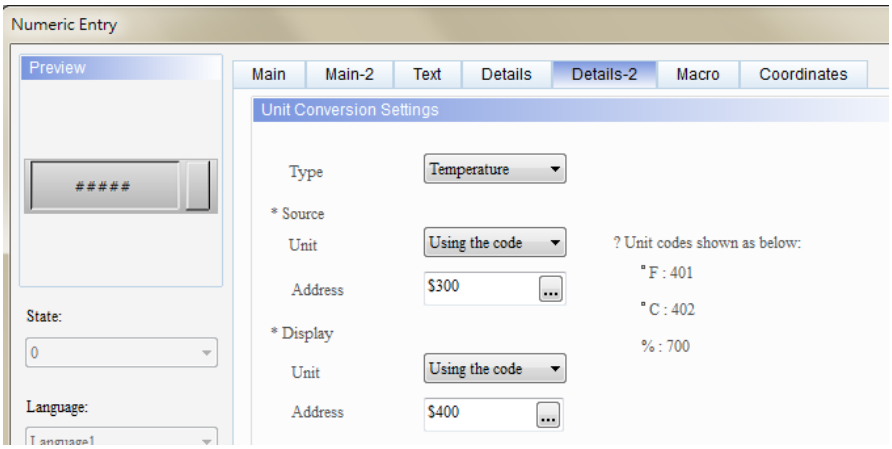
Table 9.1 Unit conversion example

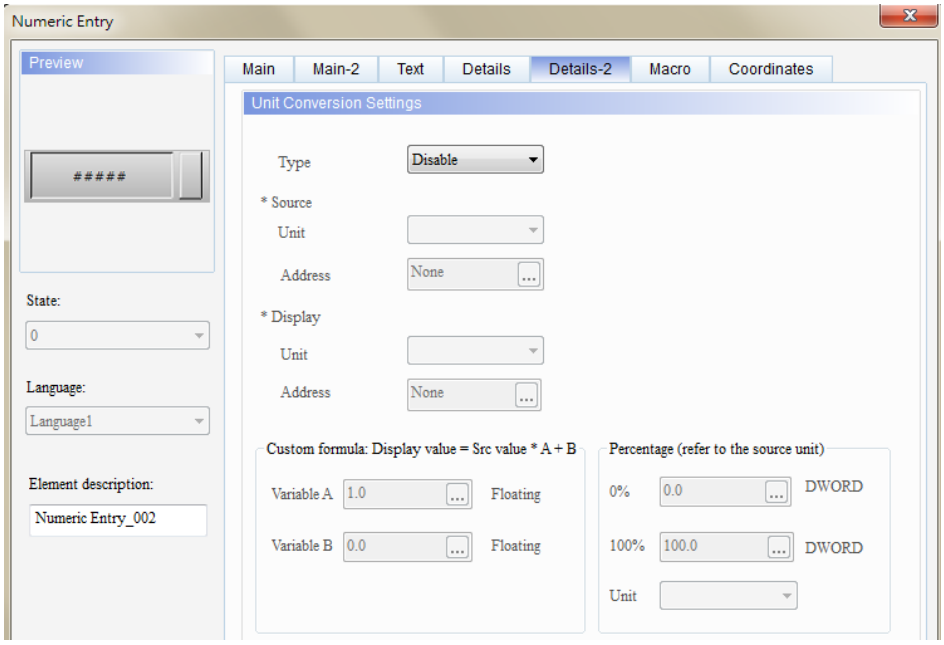
<table>
<tr><th colspan="5">Unit conversion (fixed unit)</th></tr>
<tr><td rowspan="3">Read Address</td><td colspan="2">Numeric display element (display)</td><td colspan="2">Numeric entry element (source)</td></tr>
<tr><td>Read Address</td><td>$10</td><td>Write Address</td><td>$10</td></tr>
<tr><td colspan="2"> 
</td><td colspan="2">
</td></tr>
<tr><td rowspan="3">Settings</td><td colspan="4">Numeric display / entry element</td></tr>
<tr><td>Data Type</td><td>Data Format</td><td>Integer Digits</td><td>Fractional Digits</td></tr>
<tr><td>Word</td><td>Unsigned Decimal</td><td>5</td><td>0</td></tr>
<tr><td>Unit Setting</td><td colspan="4">■ Double-click the numeric display element and go to the [Details-2] page. Select “Temperature” for [Type] and select “°F” for [Source Unit] and “°C” for [Display Unit].
 

■ Since the numeric entry element does not need unit conversion, please select “Disable” for [Type].
 
</td></tr>
</table>

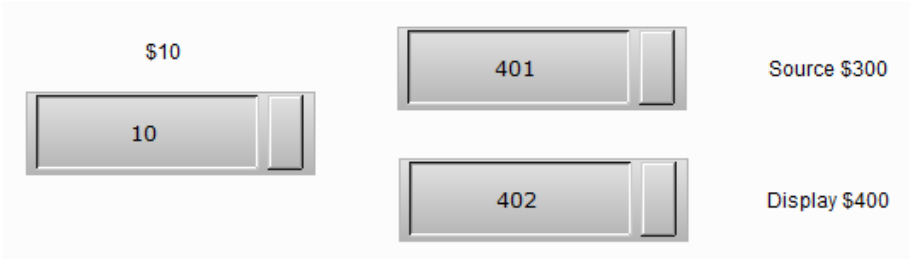
Unit conversion (fixed unit)	
Execution results	After creating the elements, please compile and download the data to the HMI. Then, enter 50 (℉) through the numeric entry element and the numeric display element will convert the temperature to 10 ℃.

Table 9.2 Unit Conversion example

<table>
<tr><th colspan="2">Unit conversion (use code)</th></tr>
<tr><td>Read Address</td><td>
<table>
<tr><th colspan="2">Numeric Entry Element</th><th colspan="2">Numeric Entry Element (source)</th><th colspan="2">Numeric Entry Element (display)</th></tr>
<tr><td>Read Address</td><td>$10</td><td>Write Address</td><td>$300</td><td>Write Address</td><td>$400</td></tr>
<tr><td colspan="2"> 
</td><td colspan="2"> 
</td><td colspan="2">
</td></tr>
</table>
</td></tr>
<tr><td>Settings</td><td>
<table>
<tr><th colspan="4">Numeric Entry Element</th></tr>
<tr><th>Data Type</th><th>Data Format</th><th>Integer Digits</th><th>Fractional Digits</th></tr>
<tr><td>Word</td><td>Unsigned Decimal</td><td>5</td><td>0</td></tr>
</table>
</td></tr>
<tr><td>Unit Settings</td><td>
■ Double-click the numeric entry element of $10, go to screen [Details-2] and select “Temperature” for [Type]. For the source settings, select “Using the code” for the unit and “$300” for the address. For the display settings, select “Using the code” for the unit and “$400” for the address.


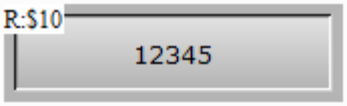
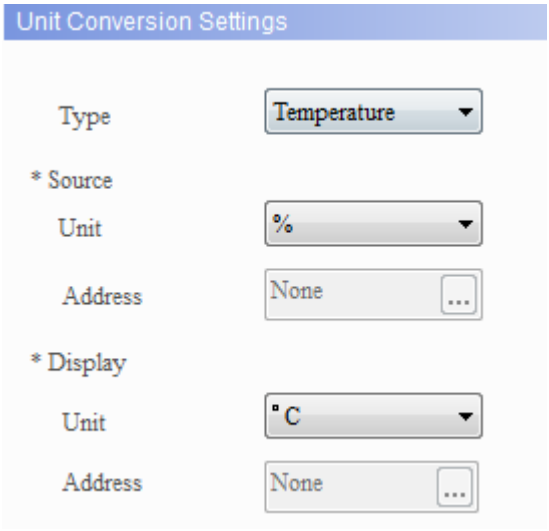
■ Since the numeric entry element of $300 and $400 do not need unit conversion, please select “Disable” for [Type].


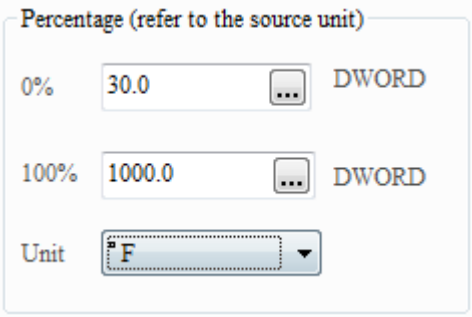
</td></tr>
</table>

Unit conversion (use code)	
Execution results	■ When you have created the element, please compile and download the data to the HMI and then enter 50 for $10. ■ Enter 401 (means °F) for $300 and enter 402 (means °C) for $400, then $10 converts the value to 10°C. 

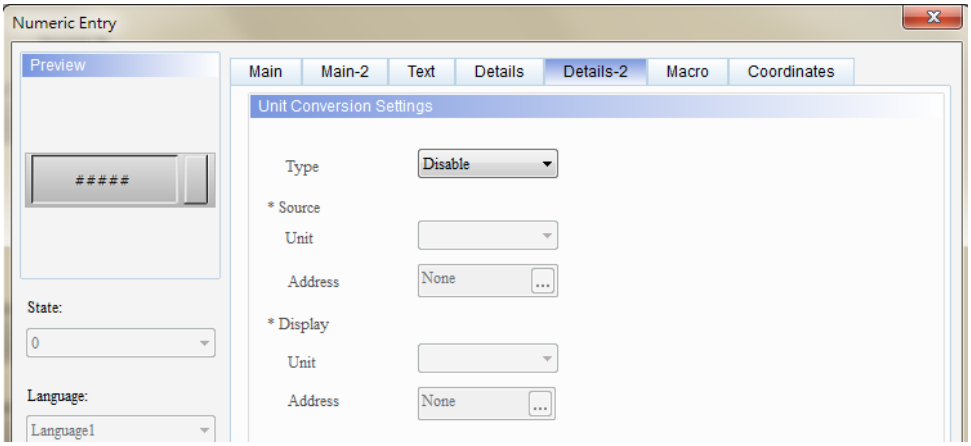
PLC1

Table 9.3 Unit Conversion example

<table>
<tr><th colspan="5">Unit conversion (percentage)</th></tr>
<tr><td>Read Address</td><td colspan="4">
<table>
<tr><th colspan="2">Numeric Display Element</th><th colspan="2">Numeric Entry Element (source)</th></tr>
<tr><td>Read Address</td><td>$10</td><td>Write Address</td><td>$10</td></tr>
<tr><td colspan="2"> 
</td><td colspan="2">
</td></tr>
</table>
</td></tr>
<tr><td>Settings</td><td colspan="4">
<table>
<tr><th colspan="4">Numeric display / numeric entry element</th></tr>
<tr><td>Data Type</td><td>Data Format</td><td>Integer digits</td><td>Fractional Digits</td></tr>
<tr><td>Word</td><td>Unsigned Decimal</td><td>5</td><td>0</td></tr>
</table>
</td></tr>
<tr><td>Unit Setting</td><td colspan="4">
■ Double-click the numeric display element of $10. Go to the [Details-2] page, select “Temperature” for [Type], set the source unit to “%”, and set the display unit to “°C”.


■ Set the percentage 0% to 30.0 and 100% to 1000.0.
■ Since the source unit is %, the percentage setting unit can be °F or °C.
In this example, °F is used as the unit.


</td></tr>
</table>

Unit conversion (percentage)	
Unit Setting	■ Numeric entry element of $10 does not need unit conversion setting, so please select “Disable” for [Type]. 
Execution results	■ After creating the elements, please compile and download the data to the HMI. The value for numeric entry element of $10 is 0, so the numeric display element displays 30, meaning 0% equals value 30. ■ If you set the $10 value input to 100, the displayed value will be 1000, which means the value for 100% is 1000.

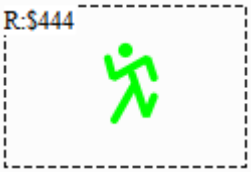
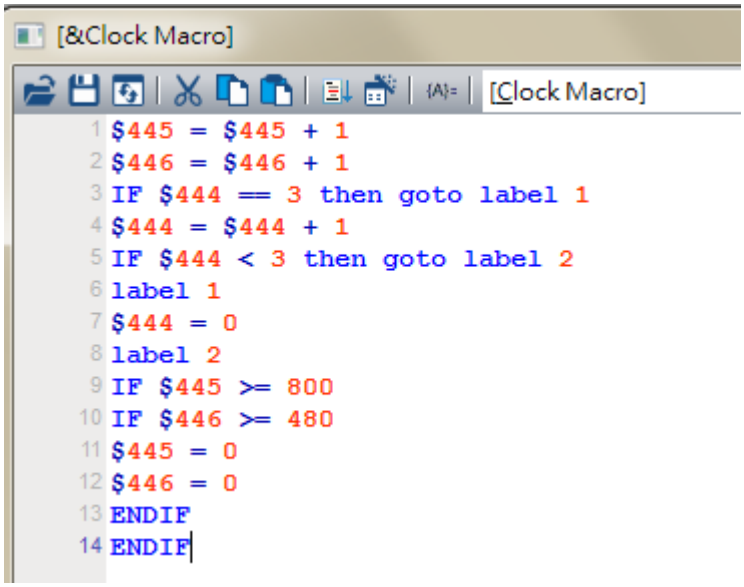
10. Animated Graphic

Animated graphics allow you to set multi-state graphics or import GIF files. In the past, the software separates one GIF file into multiple graphs, so users have to set the corresponding states individually, which is not easy for programming; the new software version has improved the GIF graphic importing method, enabling one state to correspond to one GIF file.

The read memory address of the animated graphic element enables the read values to correspond to the switching graphics set in the animated graphic element as well as specifying the target position for the element to move to. Please refer to the example description in Table 10.1.

PLC1

Table 10.1 Animated graphic example

Animated Graphic	
Read Address	Read Address of the animated graphic element: $444. 
Set the property for the animated graphic element.	■ Set [State Counts] to 3, which means to import three GIF images. ■ Select “Yes” for [Clear Picture]; this means the image of previous state does not stay when switching to the next image.
Import File	■ Create a new picture bank, which is named “test”, and import three GIF images. ■ Enter the [Picture] page of the animated graphic elements, import the images for State 0, State 1, State 2 respectively.
Edit Clock Macro	Go to [Options] > [Clock Macro]: ■ $445 stands for defining [Read address + 1] as the X-coordinate (horizontal axis) of the animated graphic element. ■ $446 stands for defining [Read address + 2] as the Y-coordinate (vertical axis) of the animated graphic element. 
Execution results	After you compile and download the screen data to the HMI, these three GIF images keep rotating and move according to the memory address read by the horizontal and vertical axes.

11. Operation Log Table

[Operation Log Table] is for recording how and when you operate each element after entering the HMI screen. The operation records include: change element values, user security level, and bit, etc. You can use this function for problem analysis in circumstances such as machine malfunction or poor production. In addition, you can save the records as CSV files and view them with PCs.

Note:

1. The default for [Operation Log Table] is a CSV file which saves up to 10,000 sets of data.
2. The Operation Log Table can only be saved in USB Disks or SD Cards; therefore, the external storage read speed determines the Operation Log Table display and screen operation update speed.

When you double-click the Operation Log Table, the property page is as follows:

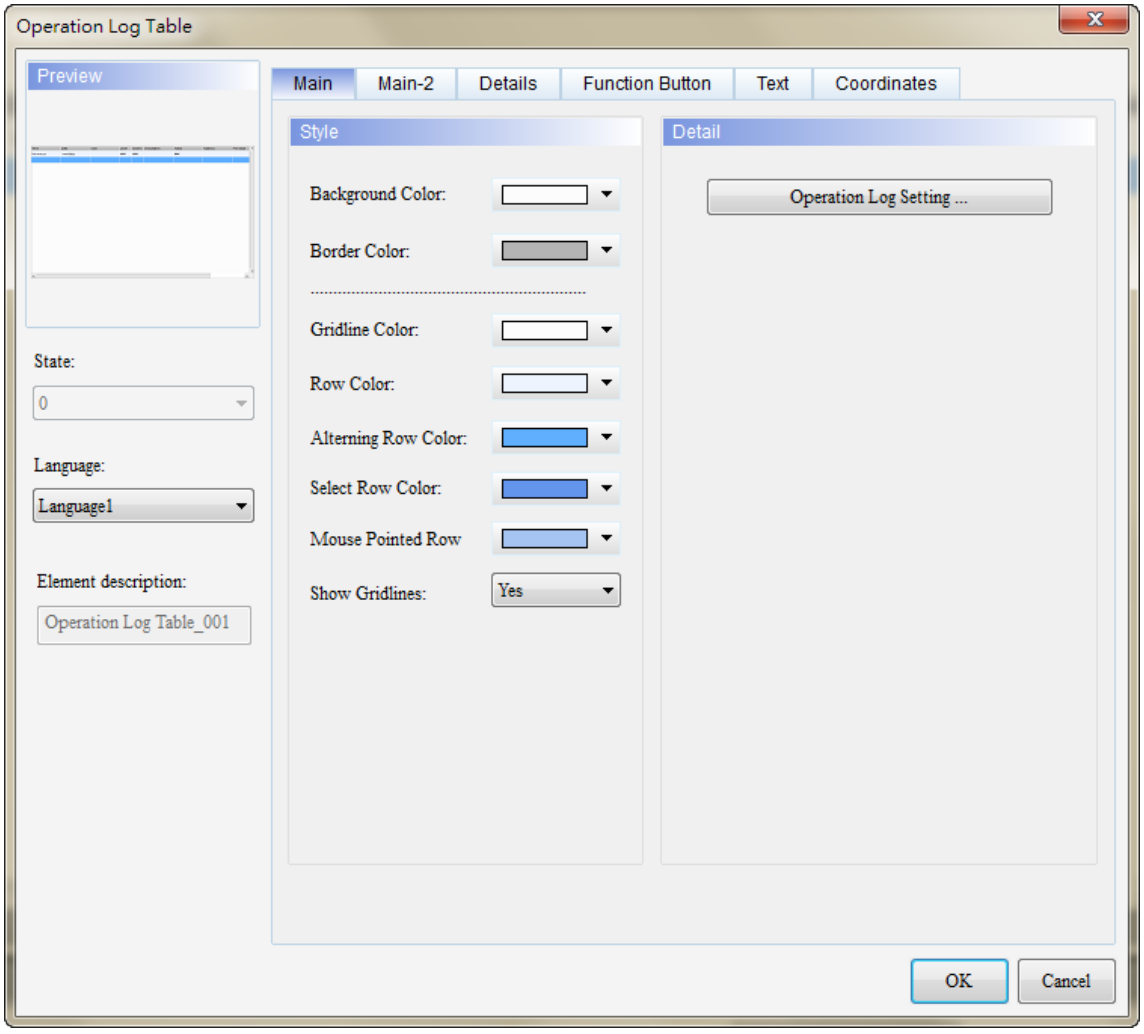


Figure 11.1 Properties of [Operation Log Table]

Table 11.1 Function page for [Operation Log Table]

Operation Log Table		
Function page	**Description**	
Preview	The [Operation Log Table] has only one state and no multi-language data display.	
Main	Style	Set the background color, border color, gridline color, row color, alternating row color, selected row color, cursor color, row color pointed by the cursor and whether to show gridlines.
	Settings	It includes options for enabling the triggering address, [Save Settings] (storage space setting and solutions for insufficient space), and [CSV output settings] (date/time format, whether to save the records to an external device as CSV file).
Main-2	Set the transparency value, enable the animation, and enable the anti-aliasing function.	
Details	Display settings	You can set whether to record the time, date, user account, user security level, screen, description, action, address, previous value, changed value, and sort the column displaying order.
	Title setting	Set the text alignment, background color, and text color.
	Time/Date	Set the time format, date format, and displayed color.
Function Button	Set the function button to be enabled and the button width and height.	
Text	Set the text font, size, and color.	
Coordinates	Set the element's X and Y coordinates as well as the width and height.	

PLC1

■ Main

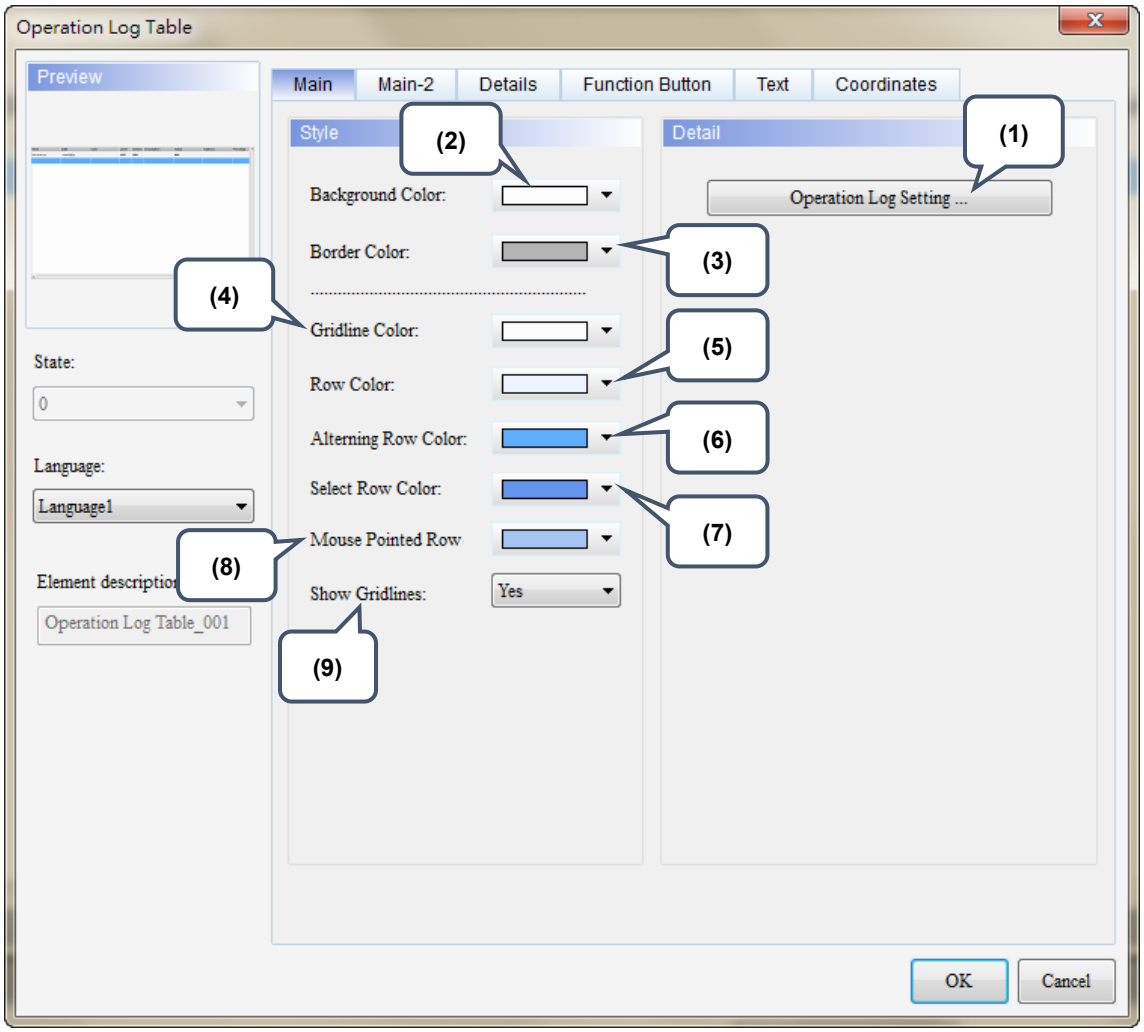
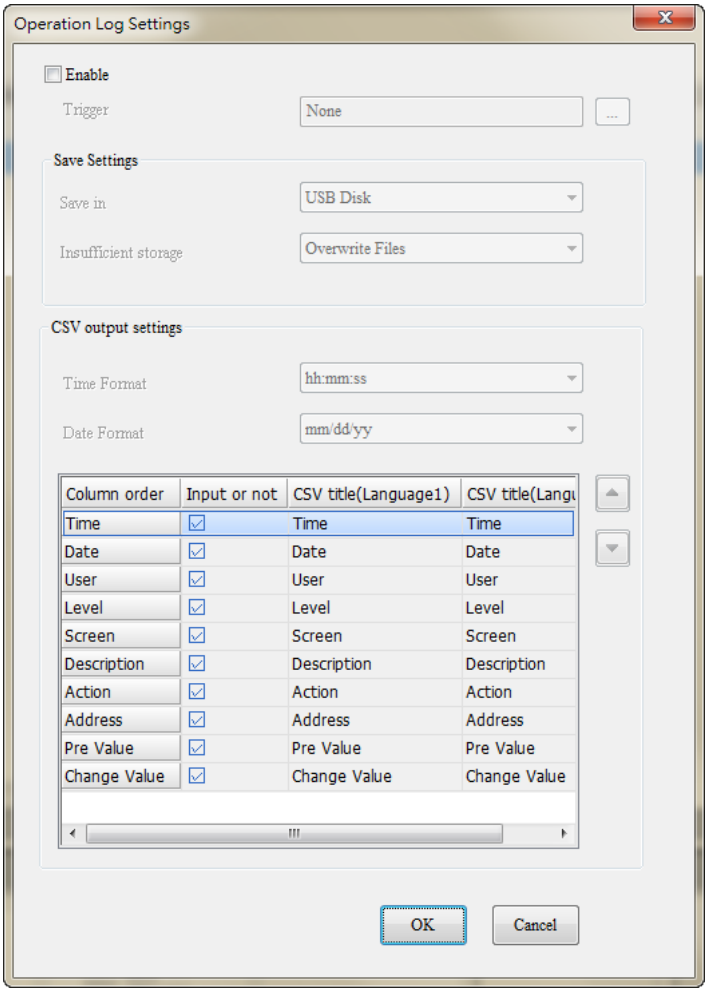
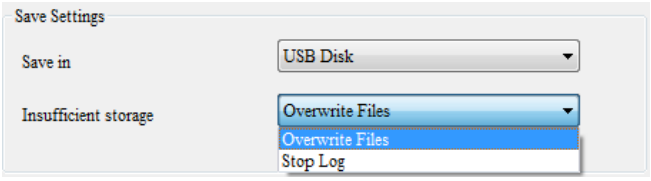
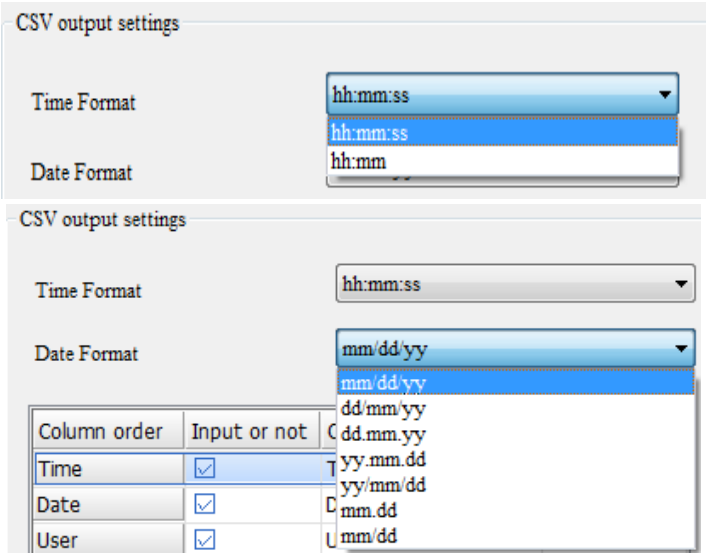


Figure 11.2 [Main] property page for the Operation Log Table element

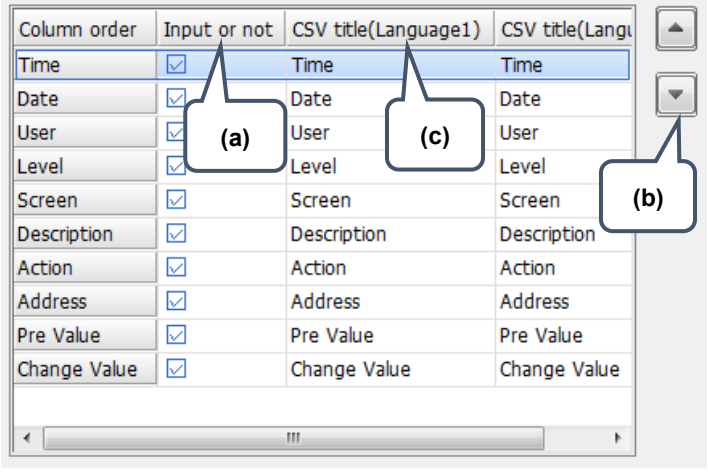
<table>
<tr><th>No.</th><th>Property</th><th colspan="2">Function description</th></tr>
<tr><td rowspan="4">(1)</td><td rowspan="4">Operation Log Settings</td><td colspan="2">You can start the setting by pressing the Operation Log Settings button or by going to [Options] > [Operation Log Settings].
 
</td></tr>
<tr><td>Enable Trigger</td><td>The default is disabled. You can start editing the setting after checking the box “Enable”.</td></tr>
<tr><td>Trigger (Address)</td><td>■ Set the triggering address for the [Operation Log Table]; available options are internal address and PLC address (supports bit triggering only).
■ As soon as this address is triggered, the [Operation Log Table] starts recording all operations of the HMI.</td></tr>
<tr><td>Save Settings</td><td>■ You can set whether to save the Operation Log Table in an USB Disk or SD Card; the file format is CSV.
■ When the external storage space is insufficient, two solutions are available, to stop recording [Stop Log] or to overwrite the files [Overwrite Files]. [Stop Log] is to stop recording the HMI operations; [Overwrite Files] is to remove the original operation data and start recording the operation all over again.
 
</td></tr>
</table>

No.	Property	Function description
		CSV output settings

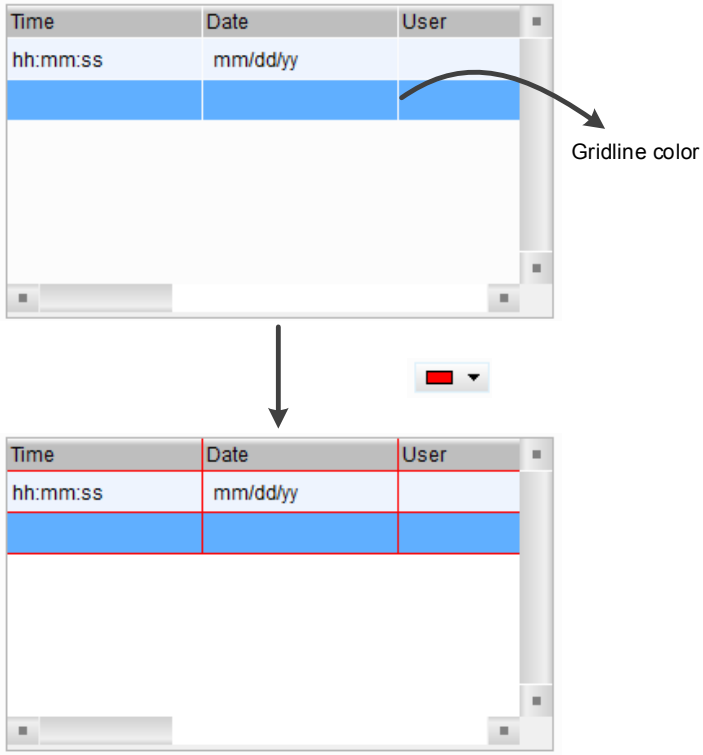
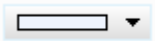
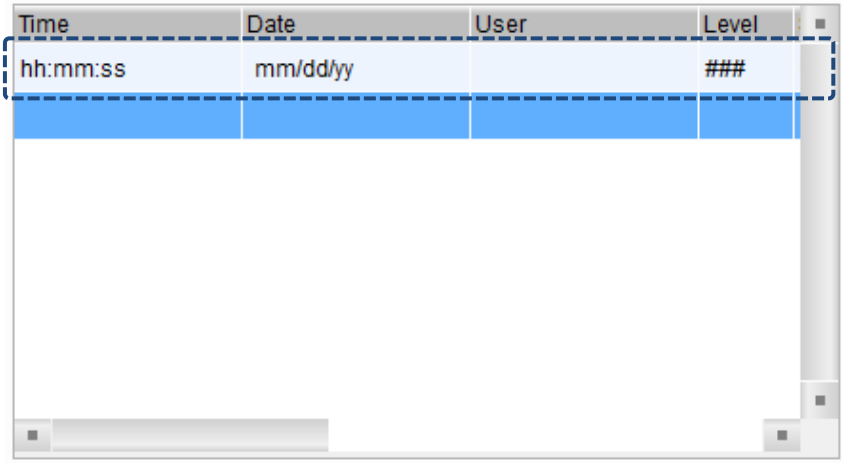
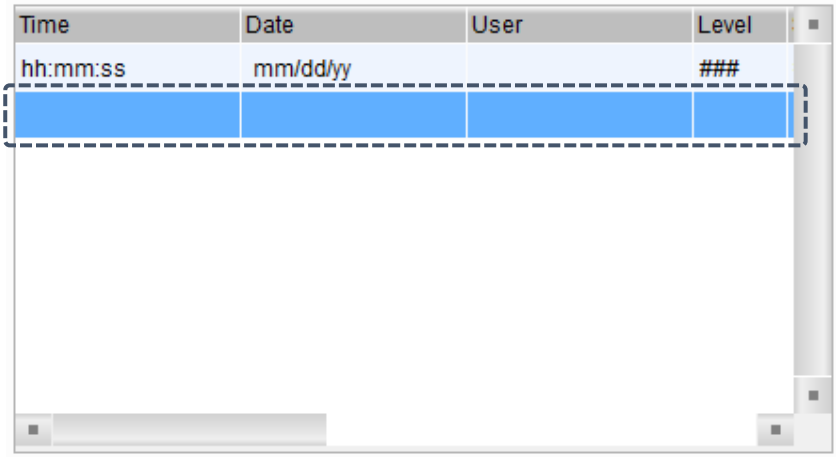
■ Set the recording date and time format for the CSV file to output.

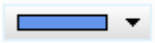
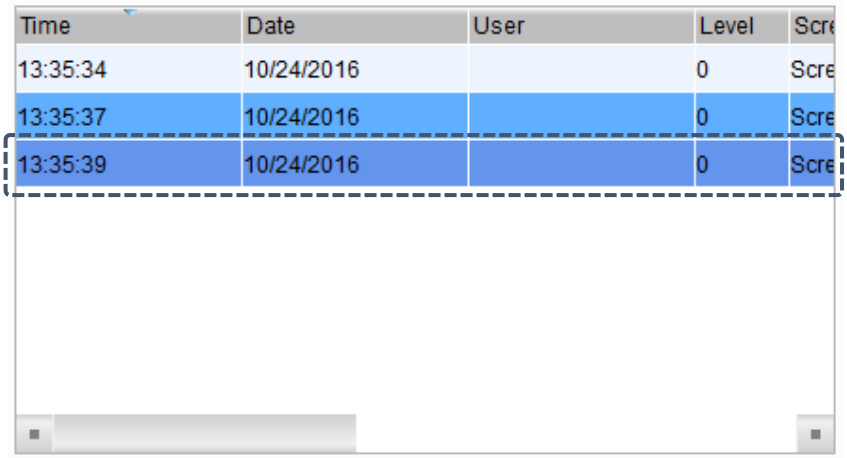
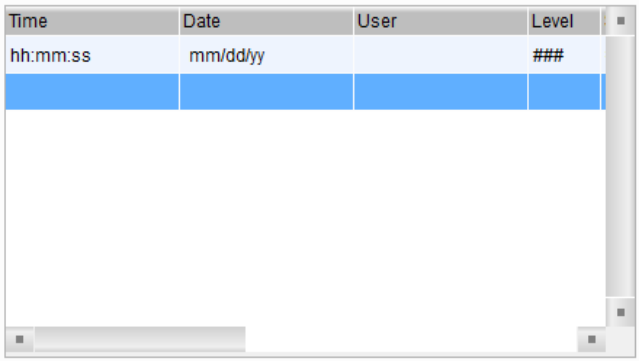
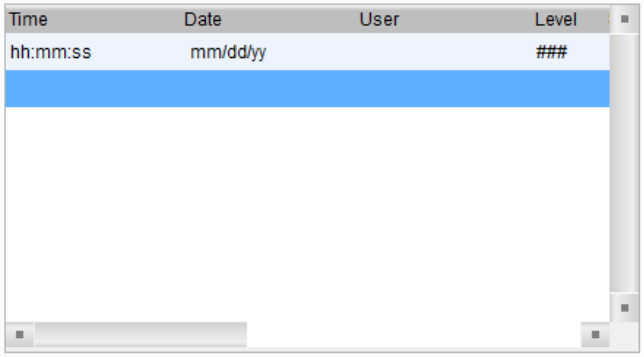


■ Select the display field (a) to output, set the column displaying order (b) and define the setting column display name (c).



No.	Property	Function description
(2)	Element Background Color	Set the background color for the Operation Log Table element.
(3)	Border Color	Set the border color of the Operation Log Table element.

No.	Property	Function description
(4)	Gridline Color	Set the gridline color of the Operation Log Table element. 
(5)	Row Color	Color of the odd rows. The default is  . 
(6)	Alternating Row Color	Color of the even rows. The default is . 

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td>(7)</td><td>Selected Row Color</td><td>When you select the data rows to view, the rows are in the color specified in this setting.
Default color of selected row is  .
 
</td></tr>
<tr><td>(8)</td><td>Mouse Pointed Row Color</td><td>When the cursor is enabled, the row changes to the specified color where the cursor places.</td></tr>
<tr><td>(9)</td><td>Show Gridlines</td><td>The default is Yes. It is to show gridlines between each data entry in the [Operation Log Table].
<table>
<tr><td>Show gridlines (select Yes)</td><td> 
</td></tr>
<tr><td>Not to show gridlines (select No)</td><td> 
</td></tr>
</table></td></tr>
</table>

■ Main-2

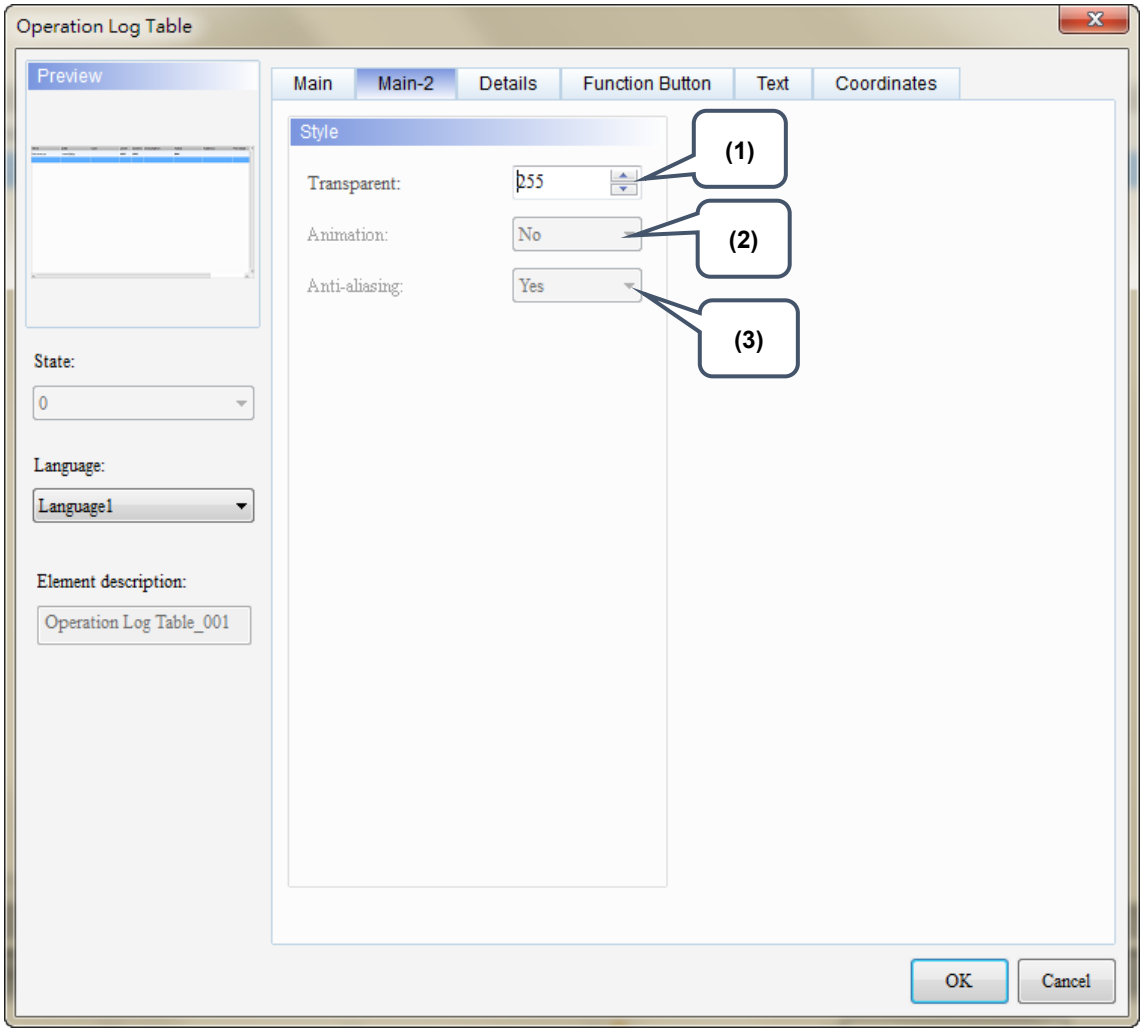


Figure 11.3 [Main-2] property page for the Operation Log Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255.The smaller the value, the higher the transparency of the element.
(2)	Animation	The [Animation] function is not available for this element.
(3)	Anti-aliasing	The [Anti-aliasing] function is not available for this element.

■ Details

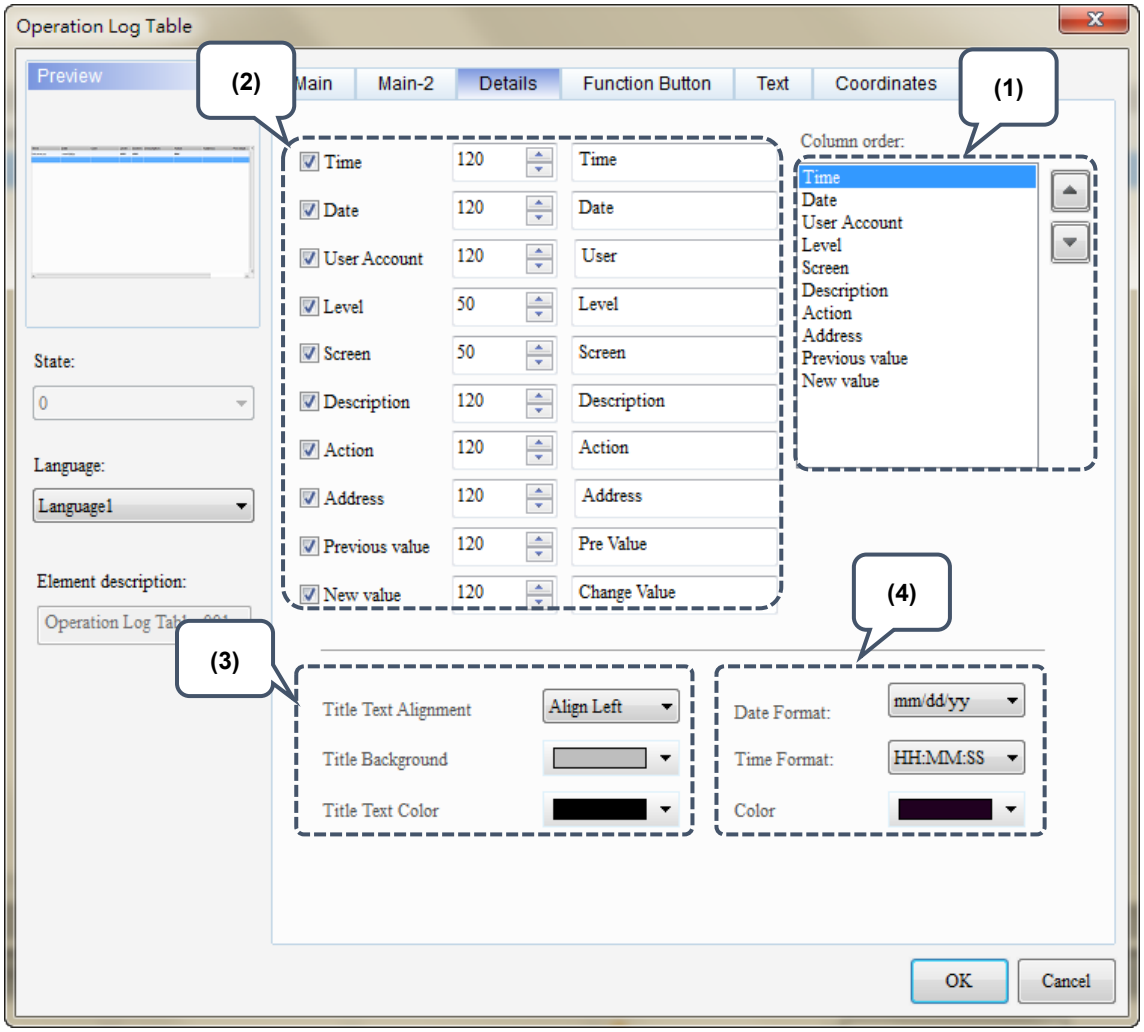
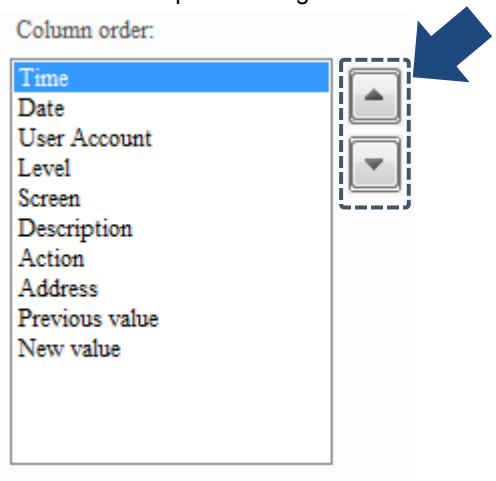
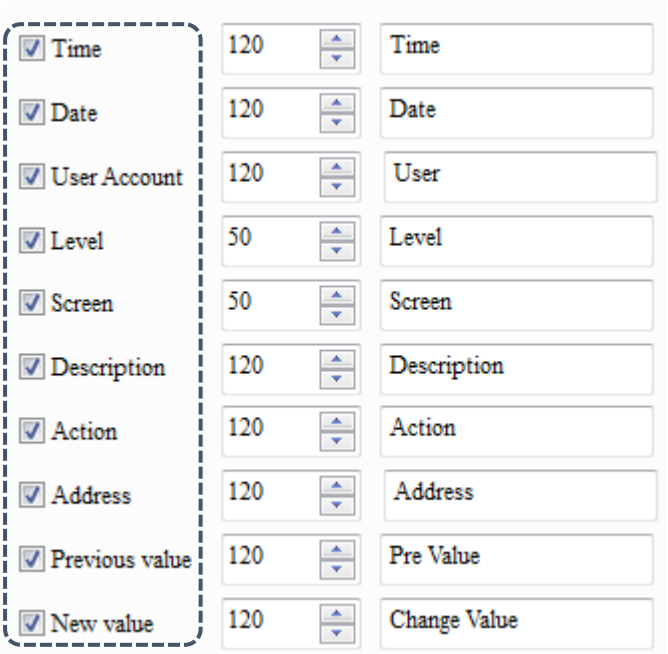
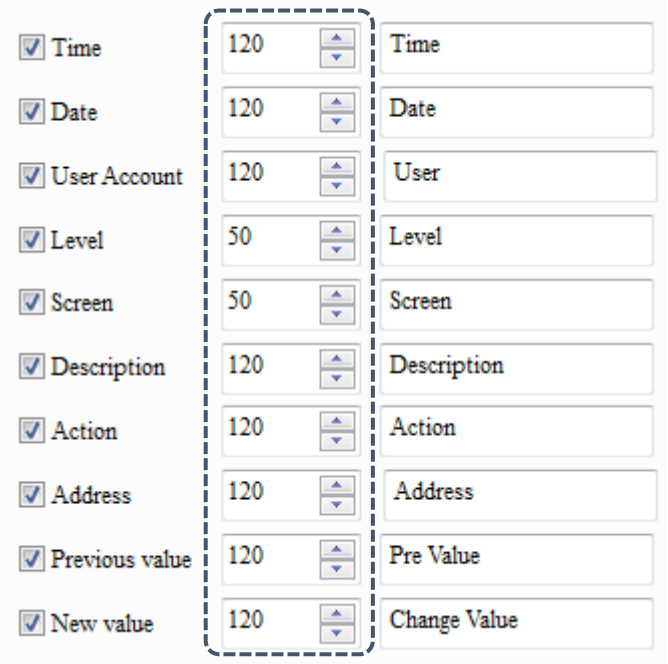
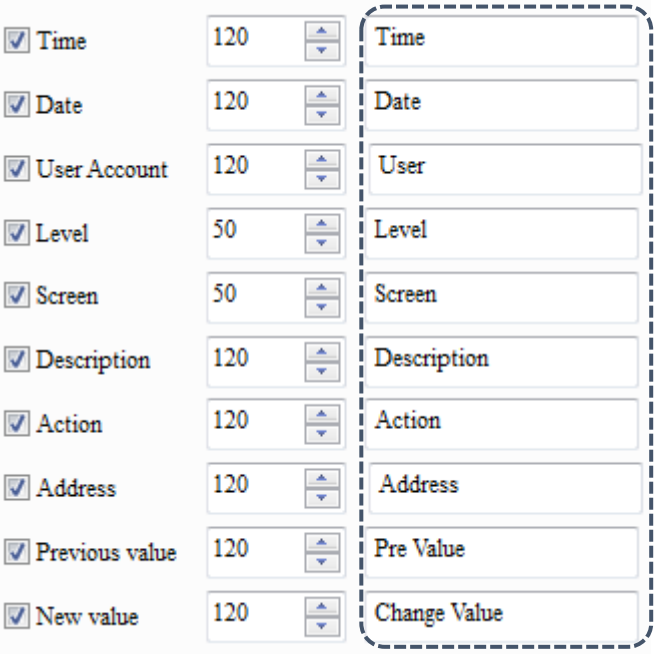
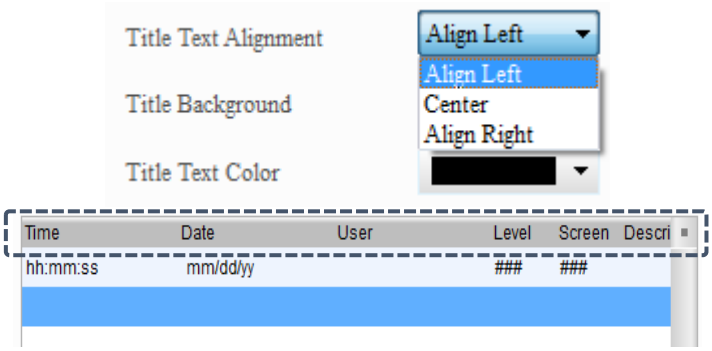
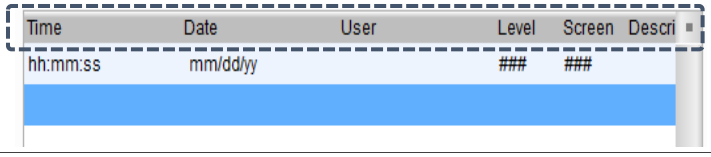
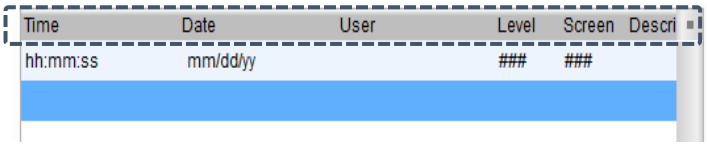
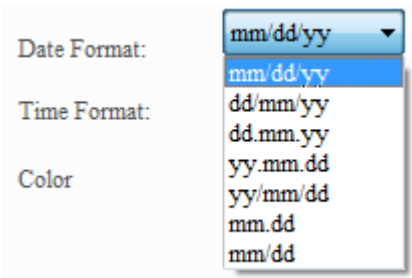
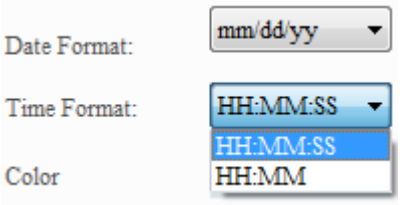
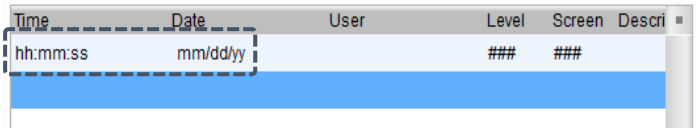


Figure 11.4 [Details] property page for the Operation Log Table element

No.	Property	Function description
(1)	Column order	You can sort the column order for the Operation Log Table. 

<table>
<tr><th>No.</th><th>Property</th><th colspan="2">Function description</th></tr>
<tr><td rowspan="2">(2)</td><td rowspan="2">Column Settings</td><td>Select display columns</td><td>In the default setting, all columns are selected and shown in the Operation Log Table; however, you can uncheck the checkboxes of the display columns as required.
 
</td></tr>
<tr><td>Adjust column width</td><td>Adjust the column width in the Operation Log Table.
 
</td></tr>
</table>

No.	Property	Function description	
		Edit display title	You can edit the column titles in the Operation Log Table. The defaults are English strings. 
(3)	Title Settings	Title Text Alignment	Determine how titles are aligned. 
		Title Background Color	Set the title background color. 
		Title Text Color	Set the display title text color. 
(4)	Date and time settings	Date Format	Set the date display format. 

No.	Property	Function description	
		Time Format	Set the time display format. 
		Color	Set the display color for the date and time. 

■ Function Button

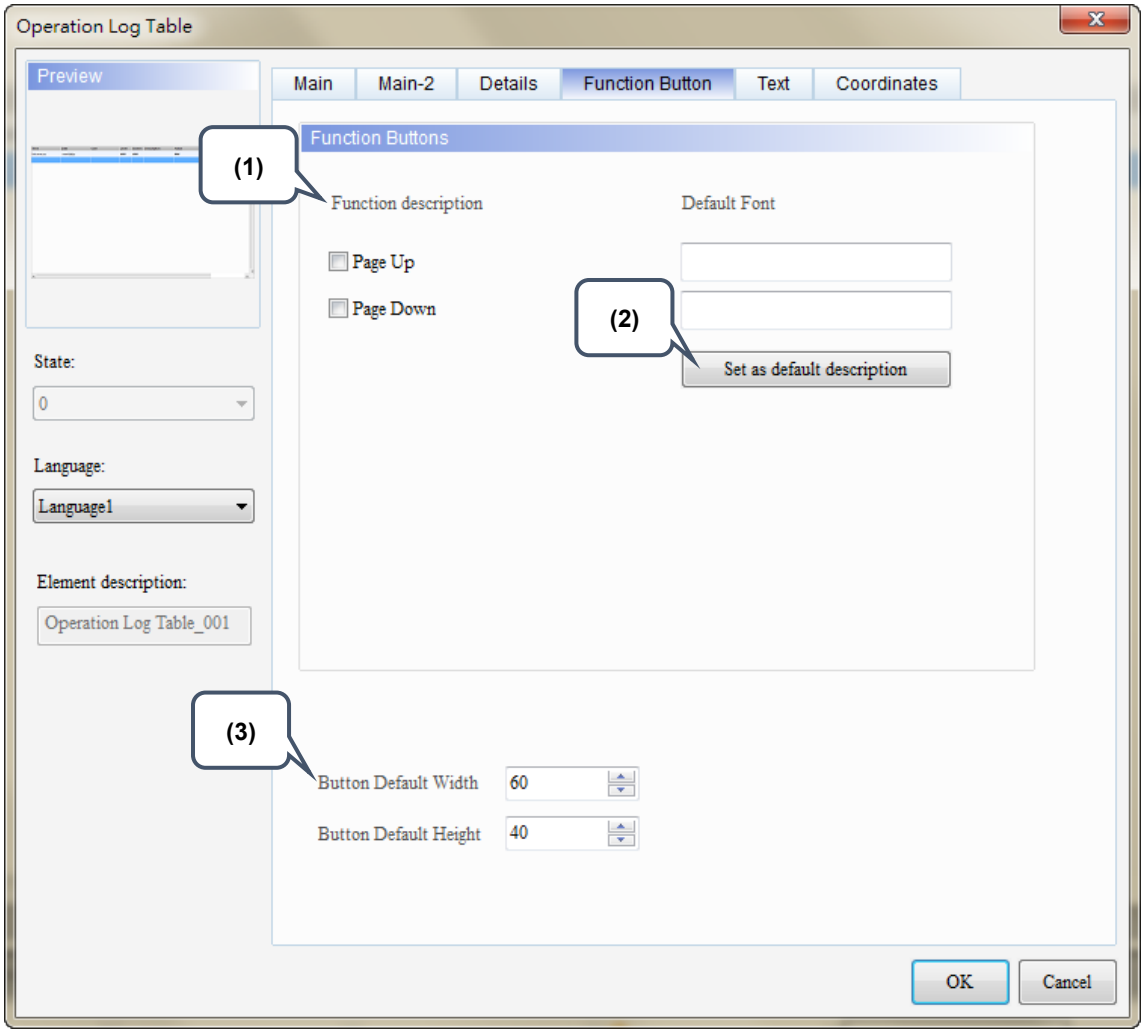
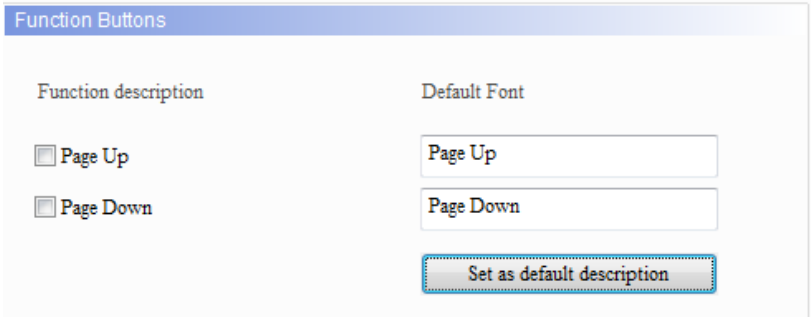


Figure 11.5 [Function Button] property page for the Operation Log Table element

No.	Property	Function description
(1)	Function description	■ Select the function buttons to display on the Operation Log Table element. Page up: go to the previous page of the Operation Log Table. Page down: go to the next page of the Operation Log Table. ■ You can use the **Page Up** and **Page Down** buttons to change the page only when there are more than 10,000 sets of data in the Operation Log Table. That is, one CSV file has 10,000 operation log data and the **Page Up** and **Page Down** buttons are for switching between files of Operation Log Tables.
(2)	Set as default description	If you click **Set as default description**, the text is automatically set as default. 
(3)	Button Default Width / Height	Adjust the button height and width to display.

■ Text

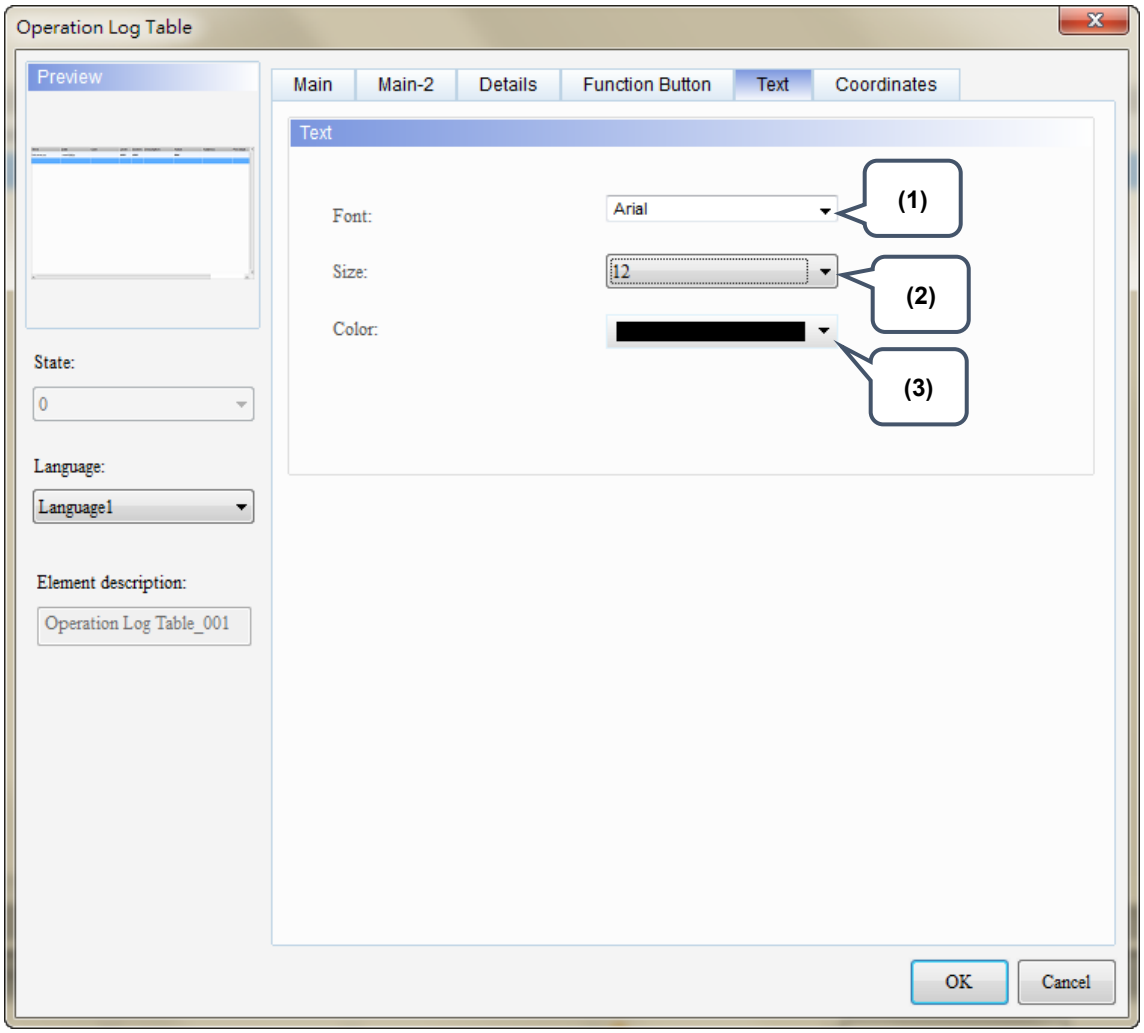


Figure 11.6 [Text] property page for the Operation Log Table element

No.	Property	Function description
(1)	Font	Set the display text font of the Operation Log Table.
(2)	Size	Set the display text size of the Operation Log Table.
(3)	Color	Set the display text color of the Operation Log Table.

■ Coordinates

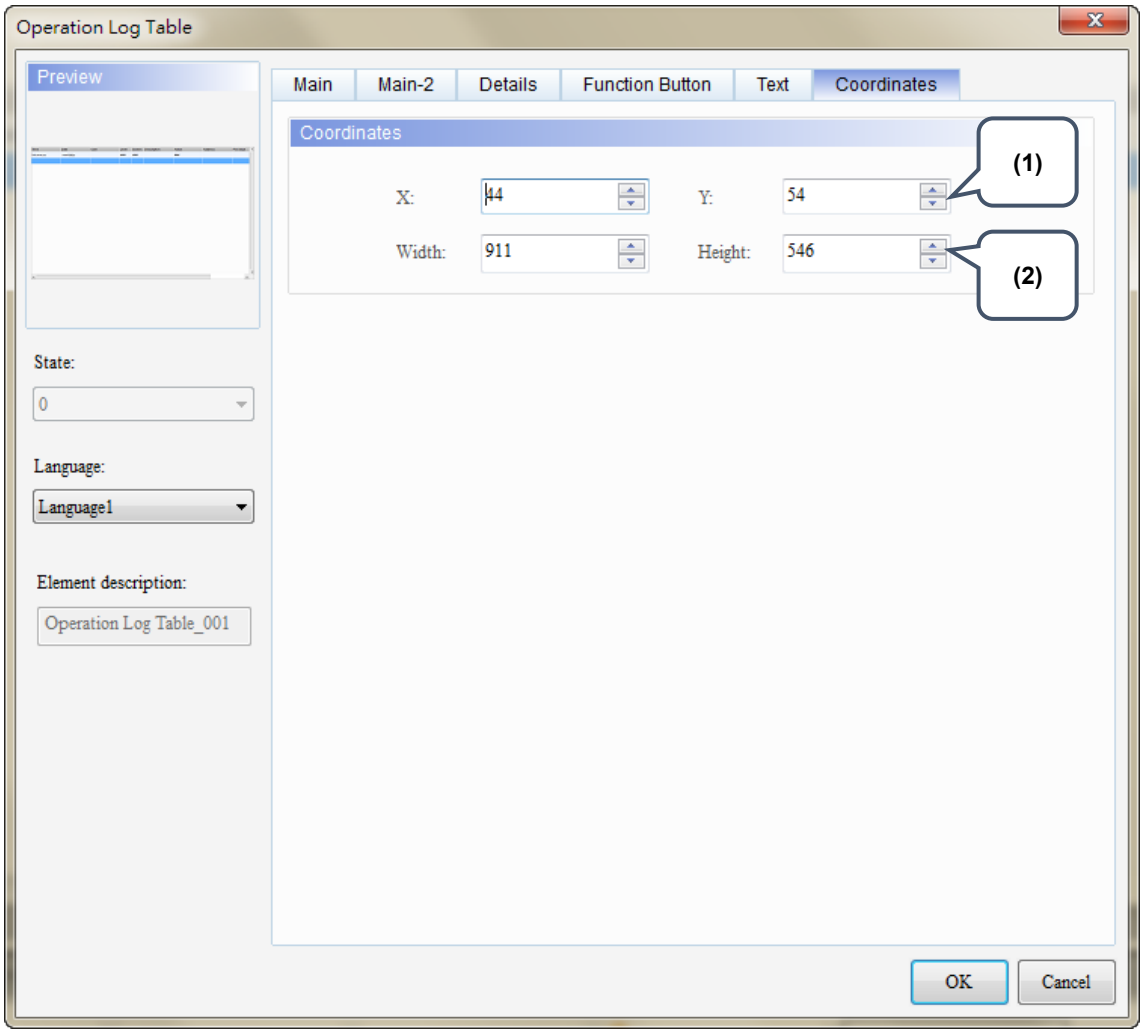


Figure 11.7 [Coordinates] property page for the Operation Log Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

12. Alarm Settings

The [Alarm Settings] page is for setting the read address, sampling cycle, maximum savable data, non-volatile memory, alarm moving sign, exporting the data to a CSV file, editing the display alarm message, and other relevant properties for the alarm elements to display.

Different from the setting methods for the DOP-B and DOP-H series HMIs that use continuous Word addresses, DOP-W and DOP-100 series use non-continuous addresses. Thus, alarms can be triggered with either Bit or Word addresses, which is more flexible and user-friendly.
In addition, alarm messages now support dynamic modification. In the old version, the displayed temperatures on the alarm messages were fixed, e.g. 100 degree; now you can add ％d1 to the alarm message and use the monitoring address in [Alarm Settings] to input the value, so the HMI displays the modified value when the alarm is triggered next time.

Alarm message supports up to 4,096 data entries. DOP-100 also provides a batch tasks tool for you to quickly complete the alarm group settings, allowing you to input the alarm group number easily. [Alarm History Table] provides more powerful functions: you can use the sorting and filter function to quickly view the alarm messages.

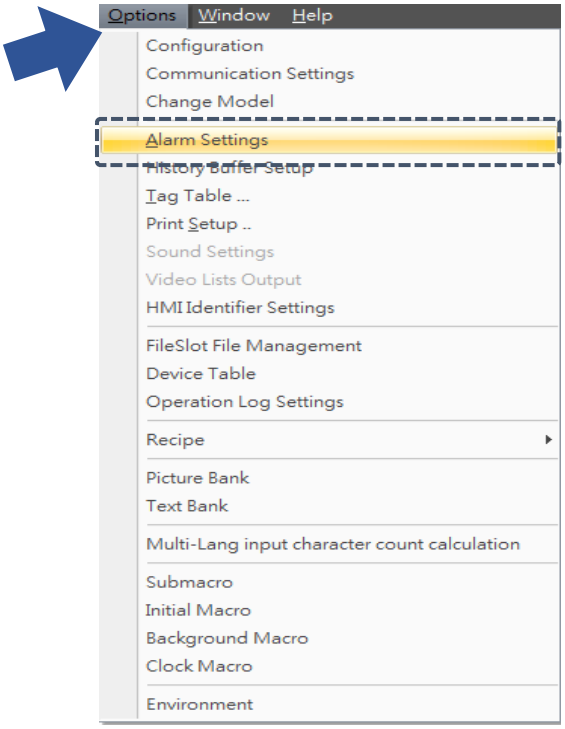
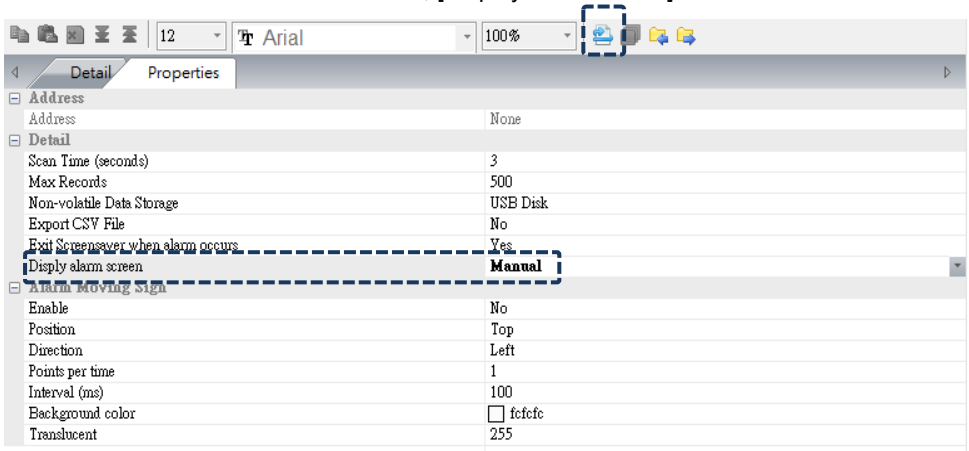
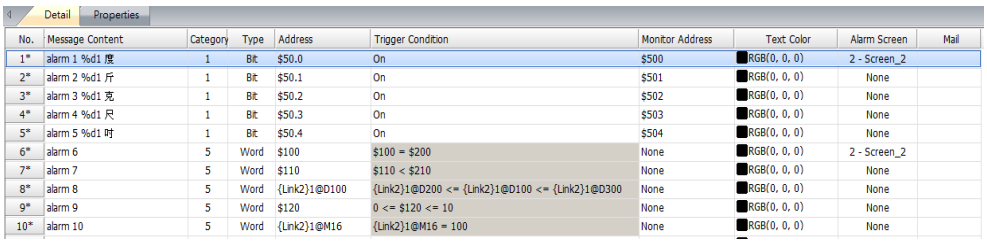
The formula provided by the software computes all the alarm-relevant data edited by users. Then, the set non-volatile memory saves these computation results (data size). If the data is saved in an HMI, the alarm data size is subject to change based on the HMI model. Please refer to the specifications for non-volatile memory in the HMI installation manual. For data saved in USB Disks or SD Cards, the alarm data size is determined by the external storage devices.

The CSV file includes alarm history and alarm frequency table and its file size is determined by the message (length) input by the user.

The following section provides an example for non-continuous addresses settings.

See Table 12.1 below.

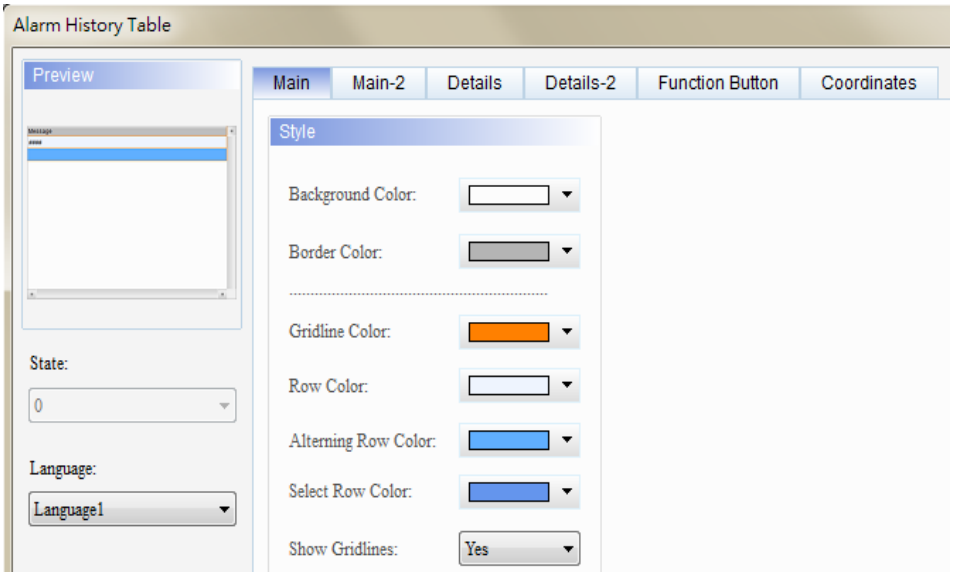
Table 12.1 [Alarm Settings] example

Alarm Settings	
Alarm setting steps	1. Go to [Options] > [Alarm Settings] to set the alarm message display properties.  2. Switch to non-continuous address; [Display alarm screen] shows “Manual”.  Set ten alarms as follows:  No. | Message Content | Category | Type | Address | Trigger Condition | Monitor Address | Text Color | Alarm Screen | Mail 1* | alarm 1 %d1 度 | 1 | Bit | $50.0 | On | $500 | RGB(0, 0, 0) | 2 - Screen_2 2* | alarm 2 %d1 斤 | 1 | Bit | $50.1 | On | $501 | RGB(0, 0, 0) | None 3* | alarm 3 %d1 克 | 1 | Bit | $50.2 | On | $502 | RGB(0, 0, 0) | None 4* | alarm 4 %d1 尺 | 1 | Bit | $50.3 | On | $503 | RGB(0, 0, 0) | None 5* | alarm 5 %d1 吋 | 1 | Bit | $50.4 | On | $504 | RGB(0, 0, 0) | None 6* | alarm 6 | 5 | Word | $100 | $100 = $200 | None | RGB(0, 0, 0) | 2 - Screen_2 7* | alarm 7 | 5 | Word | $110 | $110 < $210 | None | RGB(0, 0, 0) | None 8* | alarm 8 | 5 | Word | {Link2}1@D100 | {Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300 | None | RGB(0, 0, 0) | None 9* | alarm 9 | 5 | Word | $120 | 0 <= $120 <= 10 | None | RGB(0, 0, 0) | None 10* | alarm 10 | 5 | Word | {Link2}1@M16 | {Link2}1@M16 = 100 | None | RGB(0, 0, 0) | None

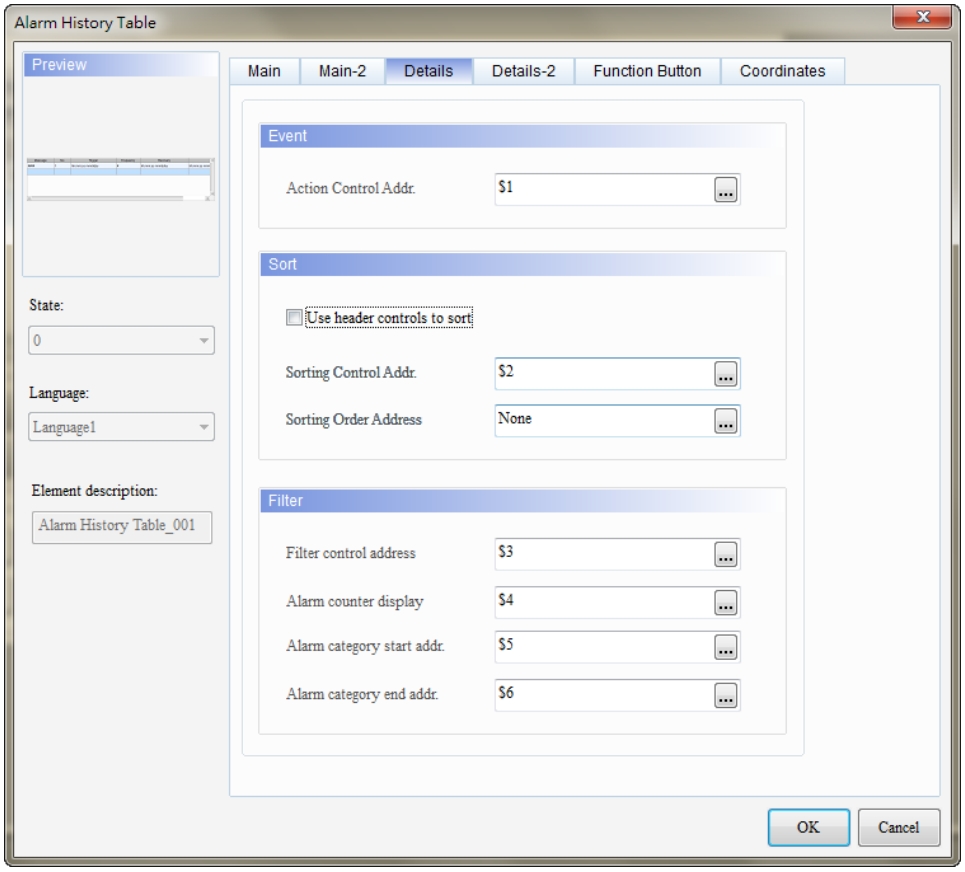
Alarm Settings

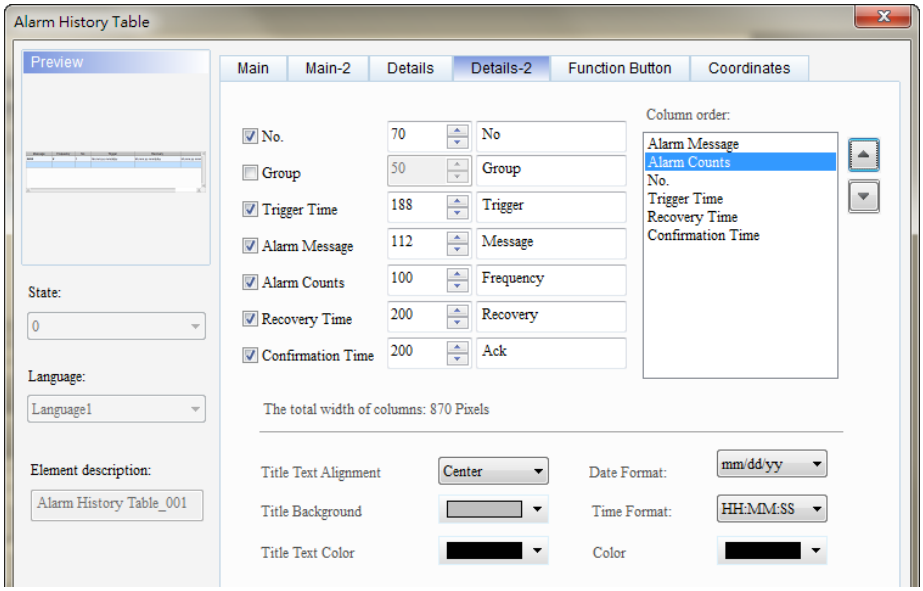
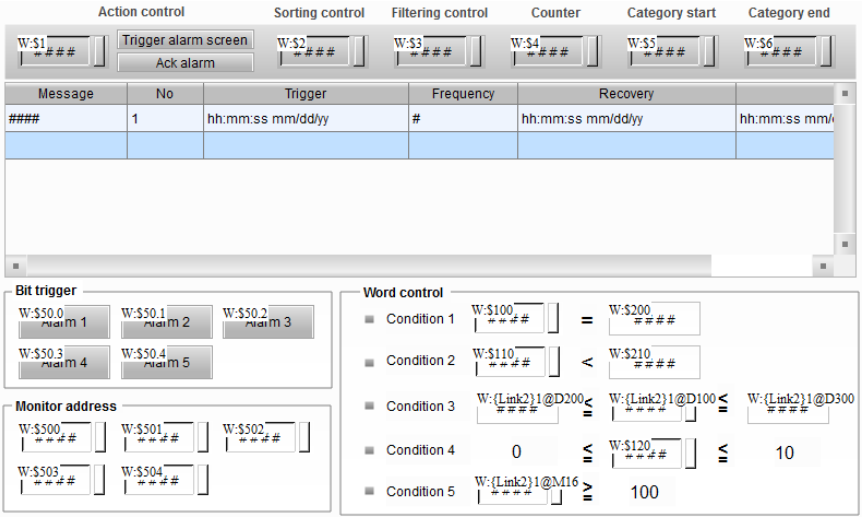
Create an Alarm History Table element

■ The [Main] page is set as below:

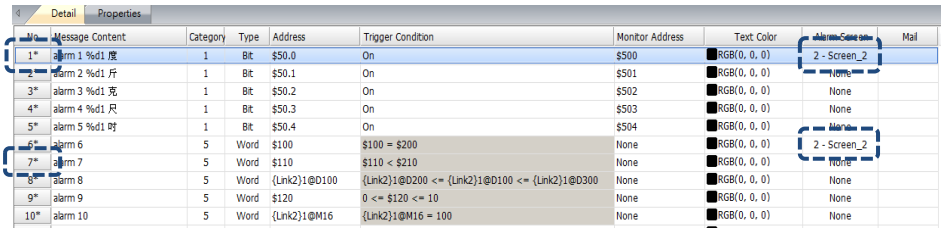


■ The [Details] page is set as below:



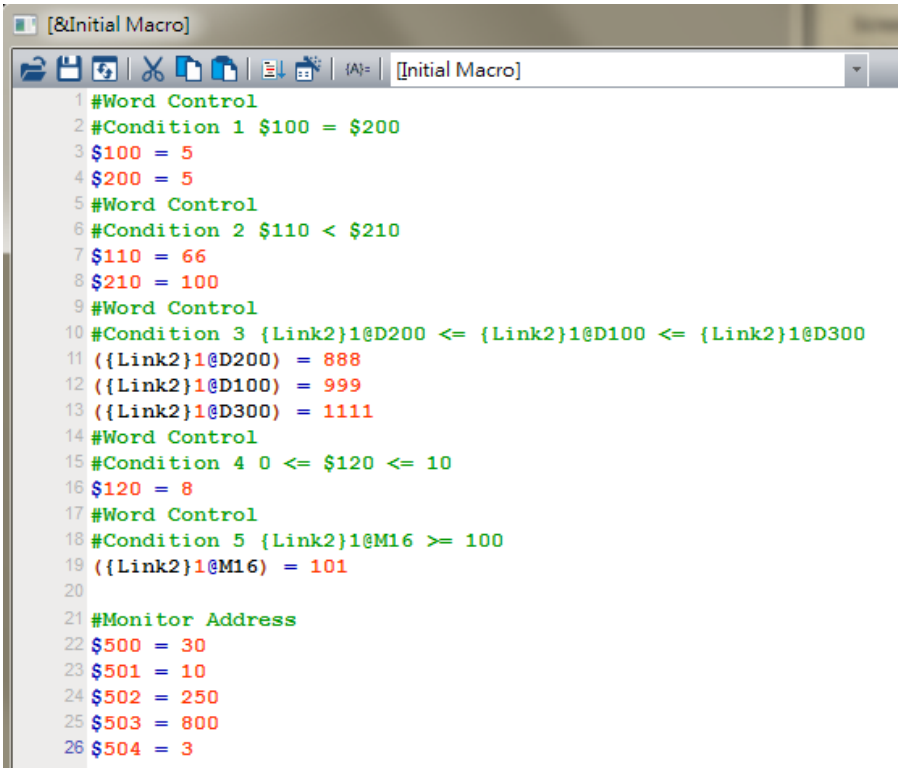
Alarm Settings	
Create an Alarm History Table element	The [Details-2] page is set as follows: 
Create Numeric Entry elements and Maintained buttons for [Alarm Settings] and [Alarm History Table] addresses	Create Maintained buttons and Numeric Entry elements. 

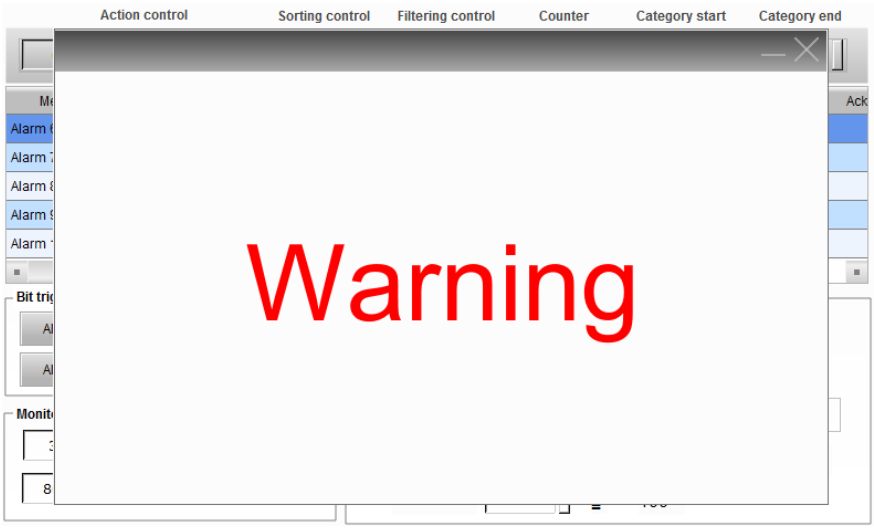
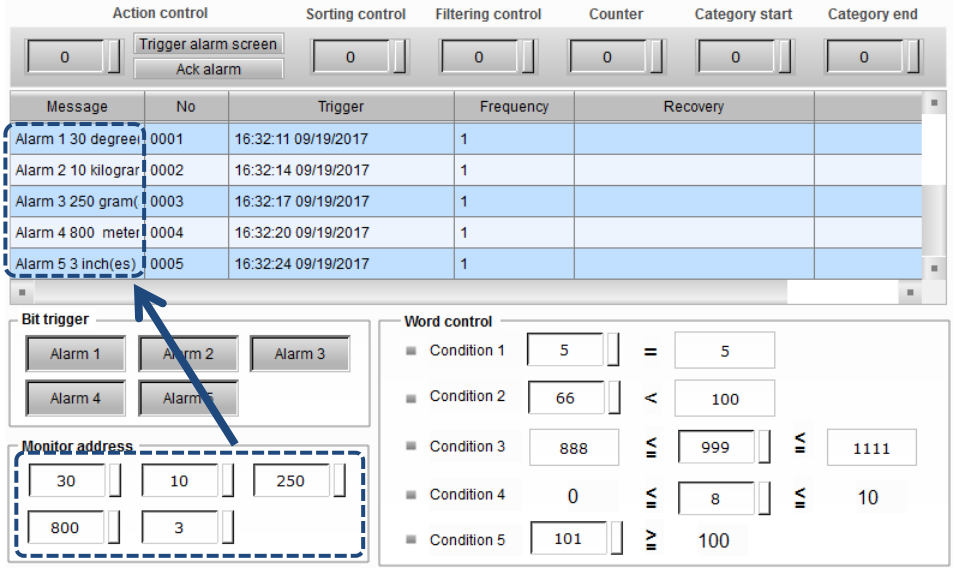
Alarm Settings	
Create Alarm Screens	After you create an alarm screen and define it as a sub-screen, please go to [Options] > [Alarms Settings] to specify Alarm 1 and Alarm 6 screens as Screen_2.
Write Macro Instructions	Go to [&Initial Macro] to edit the instructions as shown below. The action is set to “when the HMI screen opens”, Alarm 6 - Alarm 10 are on because the trigger conditions are met.

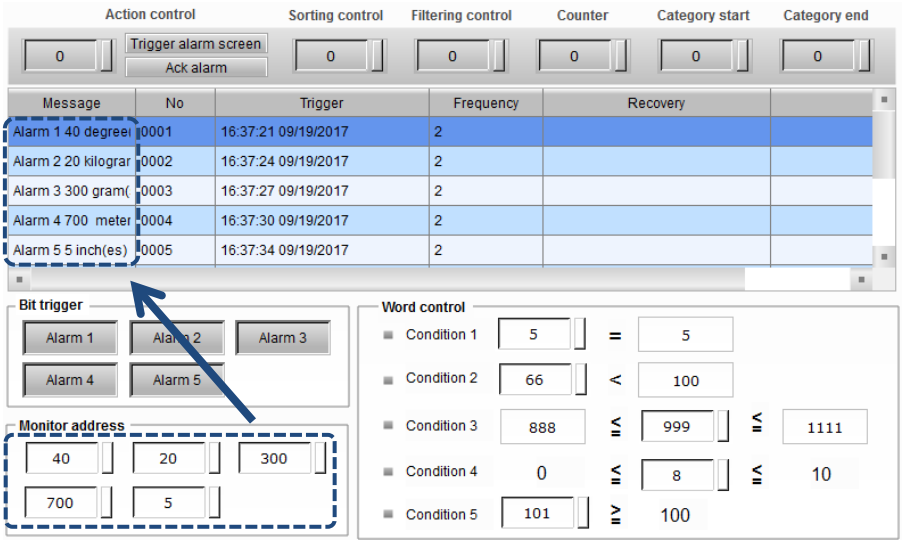
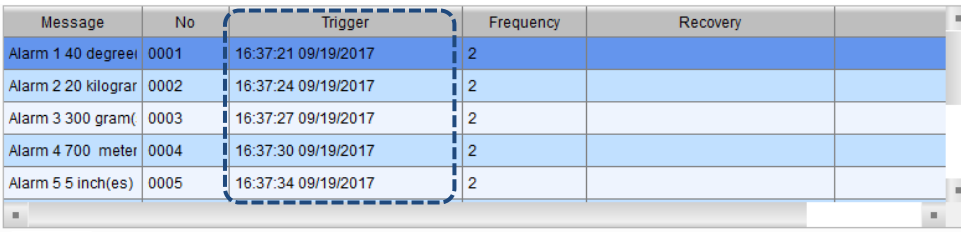
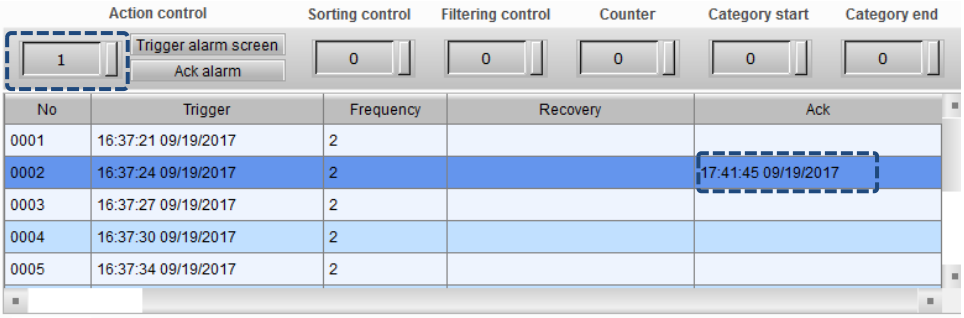


No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1*	alarm 1 %d1 度	1	Bit	$50.0	On	$500	RGB(0, 0, 0)	2 - Screen_2	
2*	alarm 2 %d1 斤	1	Bit	$50.1	On	$501	RGB(0, 0, 0)	None	
3*	alarm 3 %d1 克	1	Bit	$50.2	On	$502	RGB(0, 0, 0)	None	
4*	alarm 4 %d1 尺	1	Bit	$50.3	On	$503	RGB(0, 0, 0)	None	
5*	alarm 5 %d1 吋	1	Bit	$50.4	On	$504	RGB(0, 0, 0)	None	
6*	alarm 6	5	Word	$100	$100 = $200	None	RGB(0, 0, 0)	2 - Screen_2	
7*	alarm 7	5	Word	$110	$110 < $210	None	RGB(0, 0, 0)	None	
8*	alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300	None	RGB(0, 0, 0)	None	
9*	alarm 9	5	Word	$120	0 <= $120 <= 10	None	RGB(0, 0, 0)	None	
10*	alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 = 100	None	RGB(0, 0, 0)	None	

6	☑	alarm 6	5	Word	$100	$100 = $200
7	☑	alarm 7	5	Word	$110	$110 < $210
8	☑	alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300
9	☑	alarm 9	5	Word	$120	0 <= $120 <= 10
10	☑	alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 >= 100



Alarm Settings	
Execution results	Please compile and download all screen data to the HMI. The actions are illustrated as follows: ■ Display alarm screen action: 1. The setting conditions for this example: select “Manual” for [Display Alarm Screen] and set [Action Control Addr.] to 2, the HMI displays the alarm screen. 2. If you select “Auto” for [Display Alarm Screen] and the trigger condition for Alarm 6 is met thus it switches to on, the HMI automatically displays the set alarm screen.  3. Please close the alarm display window. ■ Trigger Alarm 1 - Alarm 5 with [Bit trigger] control. Use Bit addresses to trigger Alarm 1 - Alarm 5 and the [Alarm History Table] displays the user-defined alarm messages. 

Alarm Settings	
Execution results	If you change the values of [Monitor address] and trigger Alarm 1 - Alarm 5, the alarm messages change according to the modified values.  ■ Trigger Time When you use Bit or Word address to trigger the alarm and the trigger conditions are met, the [Alarm History Table] shows the trigger date and time.  ■ Acknowledge Time Alarm acknowledge time displays according to the specified alarm with the setting of [Action control] address 1. 

Alarm Settings	
Execution results	■ Recovery Time When you use Bit address to cancel the alarm-triggering action or the Word trigger conditions are not met (such as Condition 1 and Condition 2), the [Alarm History Table] shows the recovery time.

Message	No	Trigger	Frequency	Recovery	
Alarm 1 40 degree	0001	16:37:21 09/19/2017	2	17:47:08 09/19/2017	
Alarm 2 20 kilograr	0002	16:37:24 09/19/2017	2	17:47:08 09/19/2017	17:41:45 09/19/
Alarm 3 300 gram(	0003	16:37:27 09/19/2017	2	17:47:11 09/19/2017	
Alarm 4 700 meter	0004	16:37:30 09/19/2017	2	17:47:11 09/19/2017	
Alarm 5 5 inch(es)	0005	16:37:34 09/19/2017	2	17:47:15 09/19/2017	

■ Action Control Addr.

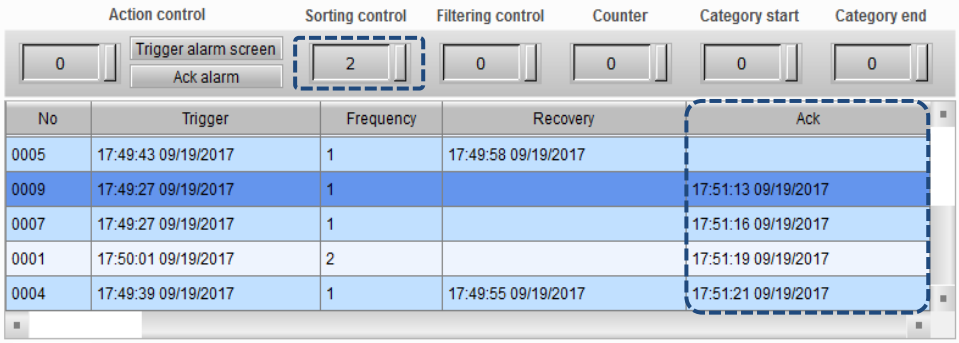
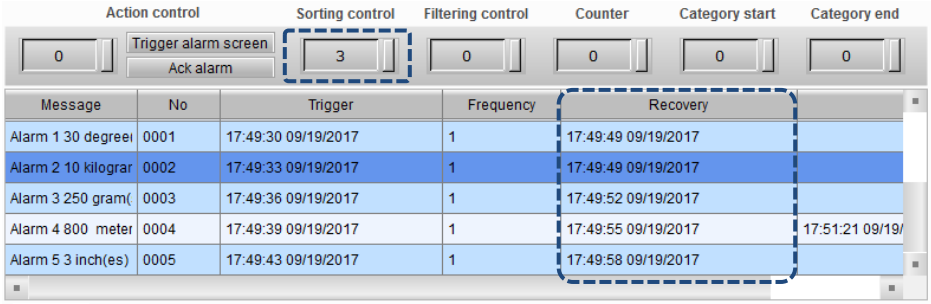
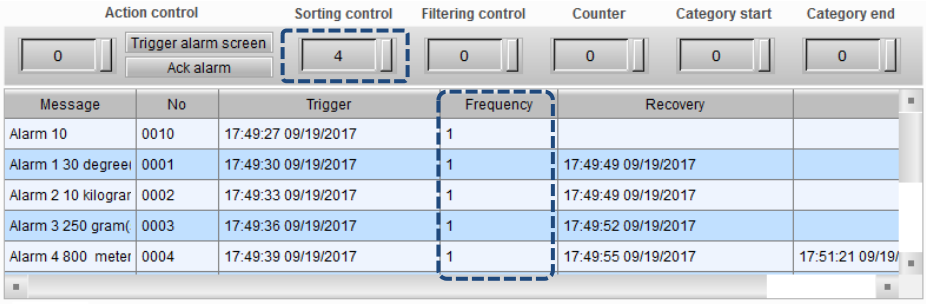
1. If the action control address is 0, the [Alarm History Table] has no action.
2. If the action control address is 1, the [Alarm History Table] shows the acknowledge time.
3. When the action control address is 2 and [Display Alarm Screen] is set to “Manual”, the HMI displays the alarm screen.

■ Sorting Control Addr.

1. If the sorting control address is 0, the [Alarm History Table] has no action.
2. If the sorting control address is 1, alarms are sorted based on the trigger time.

Action control		Sorting control	Filtering control	Counter	Category start	Category end
0	Trigger alarm screen Ack alarm	1	0	0	0	0

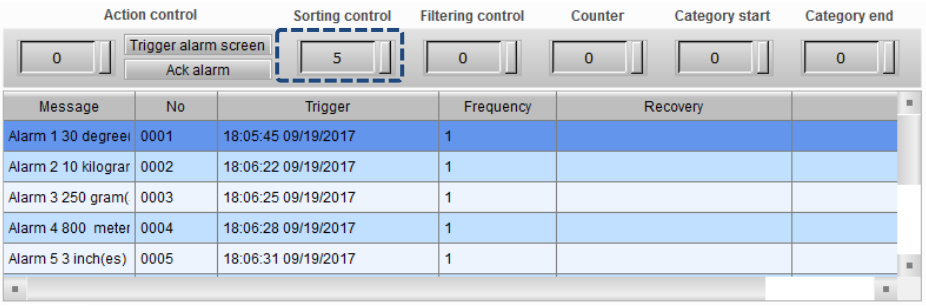
Message	No	Trigger	Frequency	Recovery	
Alarm 7	0007	17:49:27 09/19/2017	1		
Alarm 8	0008	17:49:27 09/19/2017	1		
Alarm 9	0009	17:49:27 09/19/2017	1		
Alarm 10	0010	17:49:27 09/19/2017	1		
Alarm 1 30 degree	0001	17:49:30 09/19/2017	1	17:49:49 09/19/2017	

Alarm Settings	
Execution results	3. If the sorting control address is 2, alarms are sorted based on the acknowledge time.  4. If the sorting control address is 3, alarms are sorted based on the recovery time.  5. If the sorting control address is 4, alarms are sorted based on the alarm frequencies from low to high. 

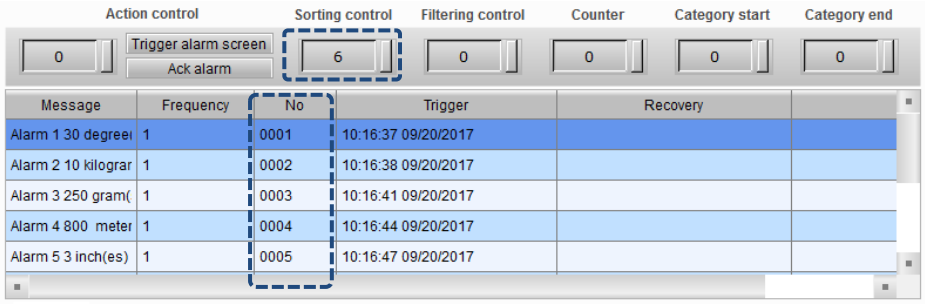
Alarm Settings

Execution results

6. If the sorting control address is 5, alarms are sorted based on the alarm category numbers in ascending order.



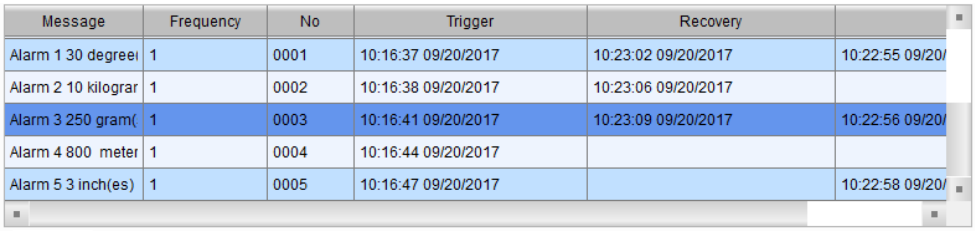
7. If the sorting control address is 6, alarms are sorted based on the alarm numbers in descending order.



■ Filtering Control Addr.

1. If the filtering control address is 0, the [Alarm History Table] displays all the triggered alarms.
2. If the filtering control address is 1, the [Alarm History Table] hides alarms with both the recovery time and acknowledge time.

Not hidden:



Alarm Settings

Execution results

Hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 9	1	0009	10:16:31 09/20/2017		
Alarm 10	1	0010	10:16:31 09/20/2017	10:23:31 09/20/2017	
Alarm 2 10 kilograr	1	0002	10:16:38 09/20/2017	10:23:06 09/20/2017	
Alarm 4 800 meter	1	0004	10:16:44 09/20/2017		
Alarm 5 3 inch(es)	1	0005	10:16:47 09/20/2017		10:22:58 09/20/

3. If the filtering control address is 2, the [Alarm History Table] hides the alarms with recovery time.

Not hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 1 30 degree	1	0001	10:16:37 09/20/2017	10:23:02 09/20/2017	10:22:55 09/20/
Alarm 2 10 kilograr	1	0002	10:16:38 09/20/2017	10:23:06 09/20/2017	
Alarm 3 250 gram(	1	0003	10:16:41 09/20/2017	10:23:09 09/20/2017	10:22:56 09/20/
Alarm 4 800 meter	1	0004	10:16:44 09/20/2017		
Alarm 5 3 inch(es)	1	0005	10:16:47 09/20/2017		10:22:58 09/20/

Hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 6	2	0006	10:23:24 09/20/2017		
Alarm 10	2	0010	10:23:37 09/20/2017		
Alarm 9	1	0009	10:16:31 09/20/2017		
Alarm 4 800 meter	1	0004	10:16:44 09/20/2017		
Alarm 5 3 inch(es)	1	0005	10:16:47 09/20/2017		10:22:58 09/20/

4. If the filtering control address is 3, the [Alarm History Table] hides the alarms with recovery time and acknowledge time.

Not hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 1 30 degree	1	0001	10:16:37 09/20/2017	10:23:02 09/20/2017	10:22:55 09/20/
Alarm 2 10 kilograr	1	0002	10:16:38 09/20/2017	10:23:06 09/20/2017	
Alarm 3 250 gram(	1	0003	10:16:41 09/20/2017	10:23:09 09/20/2017	10:22:56 09/20/
Alarm 4 800 meter	1	0004	10:16:44 09/20/2017		
Alarm 5 3 inch(es)	1	0005	10:16:47 09/20/2017		10:22:58 09/20/

Hidden:

Message	Frequency	No	Trigger	Recovery	Ack
Alarm 7	2	0007	10:23:21 09/20/2017		
Alarm 6	2	0006	10:23:24 09/20/2017		
Alarm 10	2	0010	10:23:37 09/20/2017		
Alarm 9	1	0009	10:16:31 09/20/2017		
Alarm 4 800 meter	1	0004	10:16:44 09/20/2017		

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Alarm Settings	
Execution results	5. If the filtering control address is 4, the [Alarm History Table] hides the alarms with acknowledge time. Not hidden: Hidden: 6. If the filtering control address is 5 and the [Alarm counter display] is set to 1, the [Alarm History Table] hides the data with alarm counter value that is less than 1. In this example, since there is no alarm count that is less than 1, all alarms are displayed. Not hidden:

Not hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 1 30 degree	1	0001	10:16:37 09/20/2017	10:23:02 09/20/2017	10:22:55 09/20/
Alarm 2 10 kilograr	1	0002	10:16:38 09/20/2017	10:23:06 09/20/2017	
Alarm 3 250 gram(	1	0003	10:16:41 09/20/2017	10:23:09 09/20/2017	10:22:56 09/20/
Alarm 4 800 meter	1	0004	10:16:44 09/20/2017		
Alarm 5 3 inch(es)	1	0005	10:16:47 09/20/2017		10:22:58 09/20/

Hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 10	2	0010	10:23:37 09/20/2017		
Alarm 9	1	0009	10:16:31 09/20/2017		
Alarm 10	1	0010	10:16:31 09/20/2017	10:23:31 09/20/2017	
Alarm 2 10 kilograr	1	0002	10:16:38 09/20/2017	10:23:06 09/20/2017	
Alarm 4 800 meter	1	0004	10:16:44 09/20/2017		

Not hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 7	2	0007	10:23:21 09/20/2017		
Alarm 6	2	0006	10:23:24 09/20/2017		
Alarm 10	2	0010	10:23:37 09/20/2017		
Alarm 9	1	0009	10:16:31 09/20/2017		
Alarm 10	1	0010	10:16:31 09/20/2017	10:23:31 09/20/2017	

Alarm Settings	
Execution results	Hidden: Message / Frequency / No / Trigger / Recovery Alarm 7 / 2 / 0007 / 10:23:21 09/20/2017 Alarm 6 / 2 / 0006 / 10:23:24 09/20/2017 Alarm 10 / 2 / 0010 / 10:23:37 09/20/2017 Alarm 9 / 1 / 0009 / 10:16:31 09/20/2017 Alarm 10 / 1 / 0010 / 10:16:31 09/20/2017 / 10:23:31 09/20/2017 7. If the filtering control address is 5 and the [Alarm counter display] is set to 2, the [Alarm History Table] hides the data with alarm counter value that is less than 2, so the alarms that occurred only one time are hidden. Filtering control: 5 Counter: 2 Not hidden: Message / Frequency / No / Trigger / Recovery Alarm 7 / 2 / 0007 / 10:23:21 09/20/2017 Alarm 6 / 2 / 0006 / 10:23:24 09/20/2017 Alarm 10 / 2 / 0010 / 10:23:37 09/20/2017 Alarm 9 / 1 / 0009 / 10:16:31 09/20/2017 Alarm 10 / 1 / 0010 / 10:16:31 09/20/2017 / 10:23:31 09/20/2017 Hidden: Message / Frequency / No / Trigger / Recovery / Ack Alarm 7 / 2 / 0007 / 10:23:21 09/20/2017 Alarm 6 / 2 / 0006 / 10:23:24 09/20/2017 Alarm 10 / 2 / 0010 / 10:23:37 09/20/2017 8. If the filtering control address is 6 with the alarm category start address [Category start] setting to 1 and the end address [Category end] setting to 3, the alarm group numbers that are out of the range specified by [Category start] and [Category end] will be hidden. Filtering control: 6 Category start: 1 Category end: 3 No. / Message Content / Category 1* / Alarm 1 %d1 degree(s) / 1 2* / Alarm 2 %d1 kilogram(s) / 1 3* / Alarm 3 %d1 gram(s) / 1 4* / Alarm 4 %d1 meter(s) / 1 5* / Alarm 5 %d1 inch(es) / 1 6* / Alarm 6 / 5 7* / Alarm 7 / 5 8* / Alarm 8 / 5 9* / Alarm 9 / 5 10* / Alarm 10 / 5

Alarm Settings

Execution results

Not hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 7	2	0007	10:23:21 09/20/2017		
Alarm 6	2	0006	10:23:24 09/20/2017		
Alarm 10	2	0010	10:23:37 09/20/2017		
Alarm 9	1	0009	10:16:31 09/20/2017		
Alarm 10	1	0010	10:16:31 09/20/2017	10:23:31 09/20/2017	

Hidden:

Message	Frequency	No	Trigger	Recovery	Ack
Alarm 1 30 degree(	1	0001	10:16:37 09/20/2017	10:23:02 09/20/2017	10:22:55 09/20/201
Alarm 2 10 kilograr	1	0002	10:16:38 09/20/2017	10:23:06 09/20/2017	
Alarm 3 250 gram(	1	0003	10:16:41 09/20/2017	10:23:09 09/20/2017	10:22:56 09/20/201
Alarm 4 800 meter	1	0004	10:16:44 09/20/2017		
Alarm 5 3 inch(es)	1	0005	10:16:47 09/20/2017		10:22:58 09/20/201

9. If the filtering control address is 6 with the alarm category display start address [Category start] setting to 3 and the end address [Category end] setting to 5, the alarm category numbers that are out of the range specified by [Category start] and [Category end] will be hidden.

Filtering control: 6 Category start: 3 Category end: 5

No.	Message Content	Category
1*	Alarm 1 %d1 degree(s)	1
2*	Alarm 2 %d1 kilogram(s)	1
3*	Alarm 3 %d1 gram(s)	1
4*	Alarm 4 %d1 meter(s)	1
5*	Alarm 5 %d1 inch(es)	1
6*	Alarm 6	5
7*	Alarm 7	5
8*	Alarm 8	5
9*	Alarm 9	5
10*	Alarm 10	5

Not hidden:

Message	Frequency	No	Trigger	Recovery	
Alarm 7	2	0007	10:23:21 09/20/2017		
Alarm 6	2	0006	10:23:24 09/20/2017		
Alarm 10	2	0010	10:23:37 09/20/2017		
Alarm 9	1	0009	10:16:31 09/20/2017		
Alarm 10	1	0010	10:16:31 09/20/2017	10:23:31 09/20/2017	

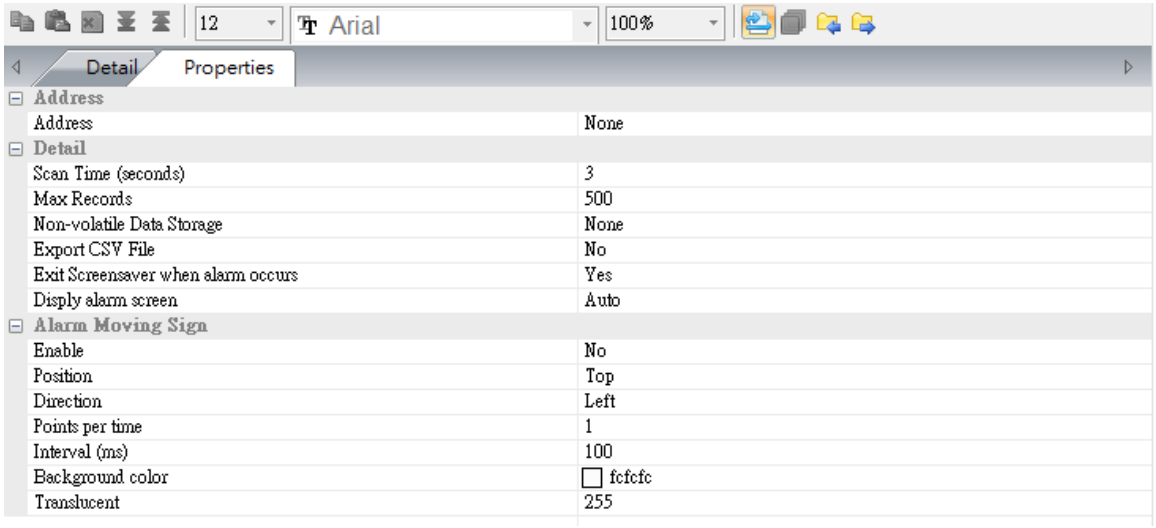
Hidden:

Message	Frequency	No	Trigger	Recovery	Ac
Alarm 7	2	0007	10:23:21 09/20/2017		
Alarm 6	2	0006	10:23:24 09/20/2017		
Alarm 10	2	0010	10:23:37 09/20/2017		
Alarm 9	1	0009	10:16:31 09/20/2017		
Alarm 10	1	0010	10:16:31 09/20/2017	10:23:31 09/20/2017	

The following introduces the detailed property functions for [Alarm Settings].

Table 12.2 Properties for [Alarm Settings]

Property descriptions for [Alarm Settings]



Property descriptions for [Alarm Settings] - Alarm Settings

Switch between continuous and non-continuous addresses

■ The default is continuous address. Its usage is the same as that of the DOP-B models.

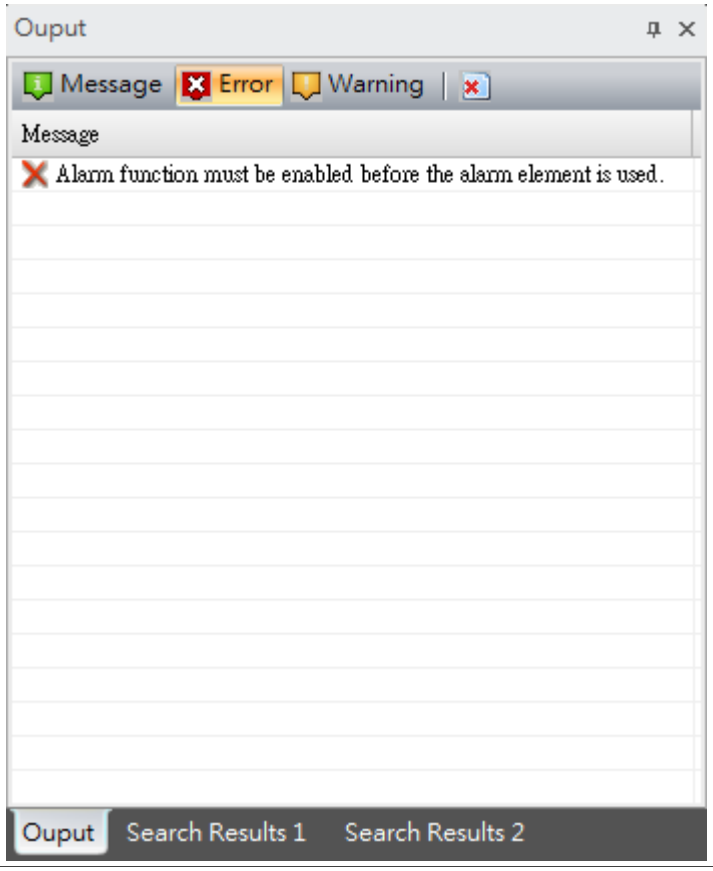
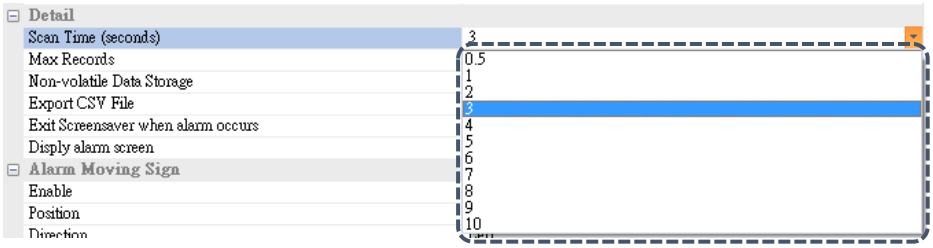
Detail | Properties

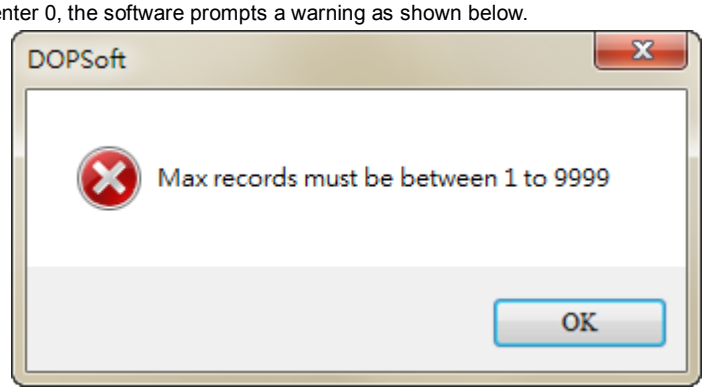
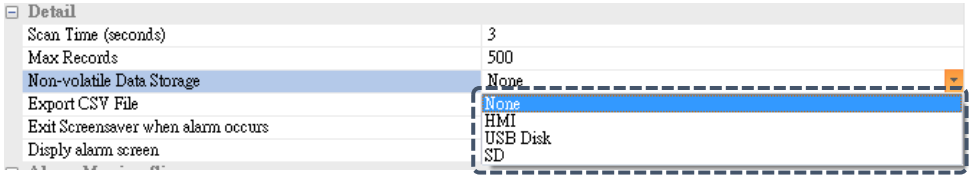
No.	Message Content	Category	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1		0	On	None	RGB(0, 0, 0)	None	
2		0	On	None	RGB(0, 0, 0)	None	
3		0	On	None	RGB(0, 0, 0)	None	
4		0	On	None	RGB(0, 0, 0)	None	
5		0	On	None	RGB(0, 0, 0)	None	
6		0	On	None	RGB(0, 0, 0)	None	
7		0	On	None	RGB(0, 0, 0)	None	
8		0	On	None	RGB(0, 0, 0)	None	
9		0	On	None	RGB(0, 0, 0)	None	
10		0	On	None	RGB(0, 0, 0)	None	
11		0	On	None	RGB(0, 0, 0)	None	
12		0	On	None	RGB(0, 0, 0)	None	
13		0	On	None	RGB(0, 0, 0)	None	
14		0	On	None	RGB(0, 0, 0)	None	
15		0	On	None	RGB(0, 0, 0)	None	
16		0	On	None	RGB(0, 0, 0)	None	
17		0	On	None	RGB(0, 0, 0)	None	
18		0	On	None	RGB(0, 0, 0)	None	
19		0	On	None	RGB(0, 0, 0)	None	
20		0	On	None	RGB(0, 0, 0)	None	

■ Press this button once, the setting changes to non-continuous address. When the setting is non-continuous address, you can use Bit or Word addresses for alarm triggering.

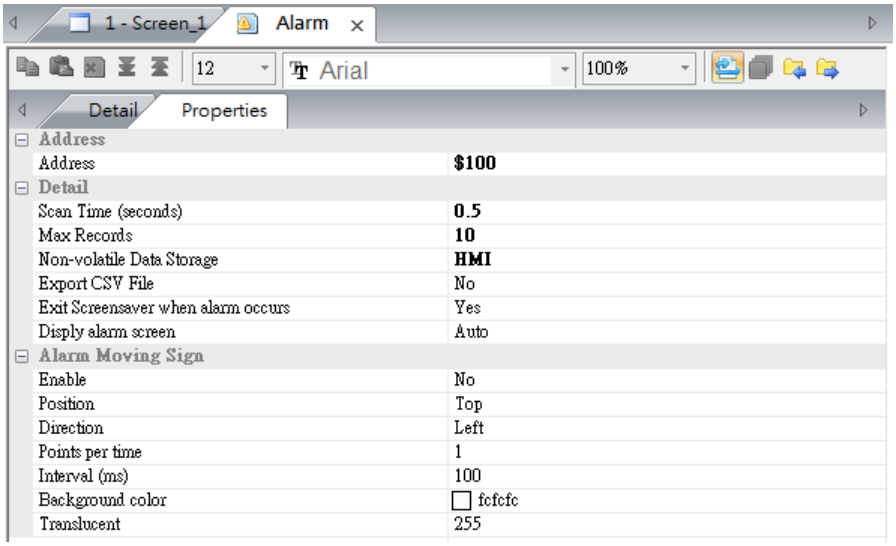
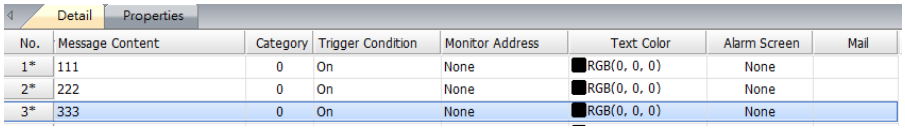
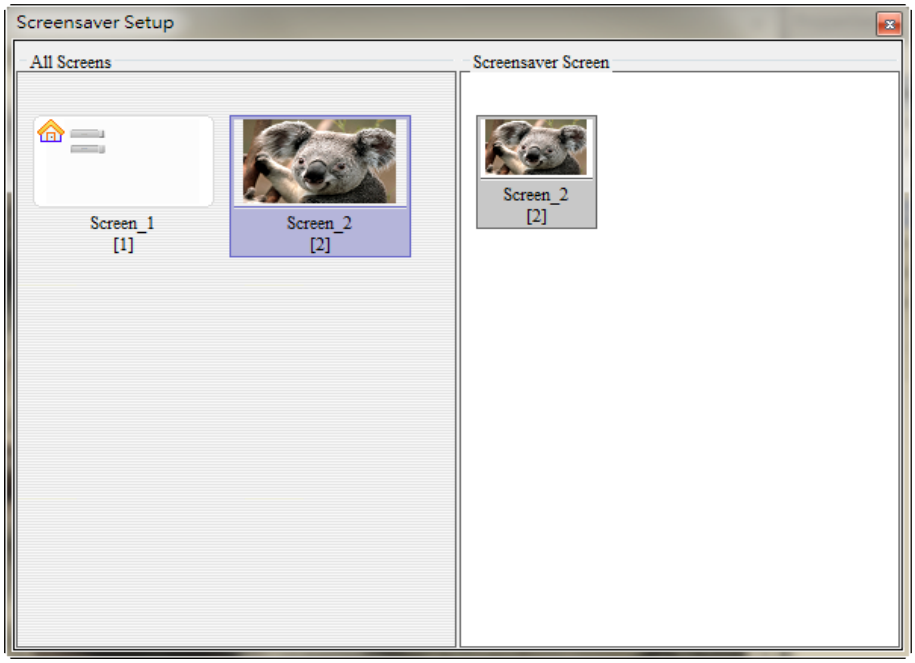
Detail | Properties

No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1		0	Bit	None	On	None	RGB(0, 0, 0)	None	
2		0	Bit	None	On	None	RGB(0, 0, 0)	None	
3		0	Bit	None	On	None	RGB(0, 0, 0)	None	
4		0	Bit	None	On	None	RGB(0, 0, 0)	None	
5		0	Bit	None	On	None	RGB(0, 0, 0)	None	
6		0	Bit	None	On	None	RGB(0, 0, 0)	None	
7		0	Bit	None	On	None	RGB(0, 0, 0)	None	
8		0	Bit	None	On	None	RGB(0, 0, 0)	None	
9		0	Bit	None	On	None	RGB(0, 0, 0)	None	
10		0	Bit	None	On	None	RGB(0, 0, 0)	None	
11		0	Bit	None	On	None	RGB(0, 0, 0)	None	
12		0	Bit	None	On	None	RGB(0, 0, 0)	None	
13		0	Bit	None	On	None	RGB(0, 0, 0)	None	
14		0	Bit	None	On	None	RGB(0, 0, 0)	None	
15		0	Bit	None	On	None	RGB(0, 0, 0)	None	
16		0	Bit	None	On	None	RGB(0, 0, 0)	None	
17		0	Bit	None	On	None	RGB(0, 0, 0)	None	
18		0	Bit	None	On	None	RGB(0, 0, 0)	None	
19		0	Bit	None	On	None	RGB(0, 0, 0)	None	
20		0	Bit	None	On	None	RGB(0, 0, 0)	None	

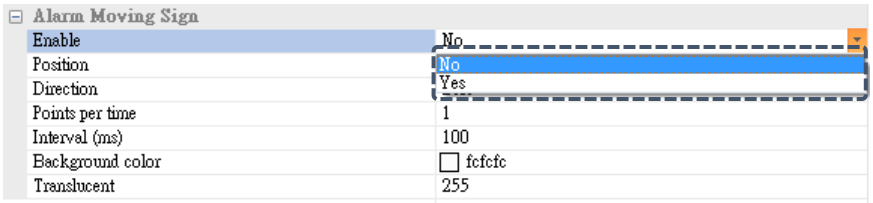
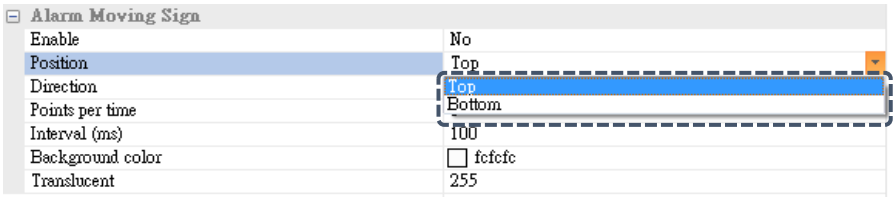
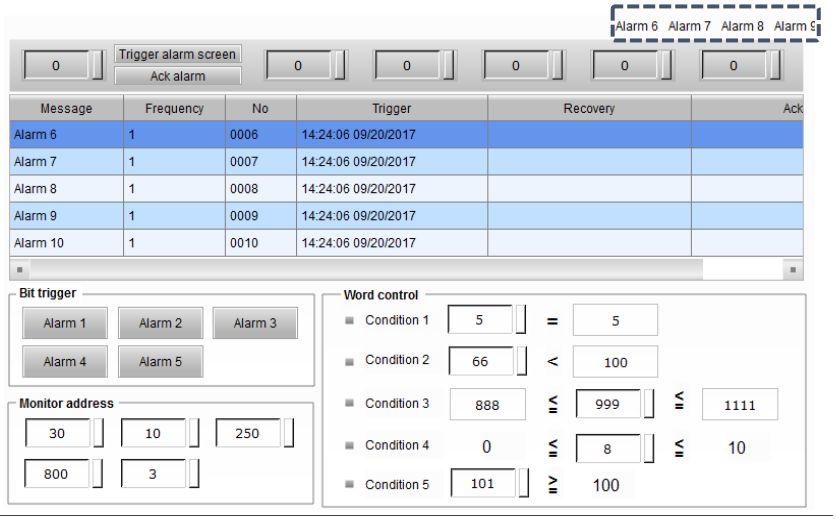
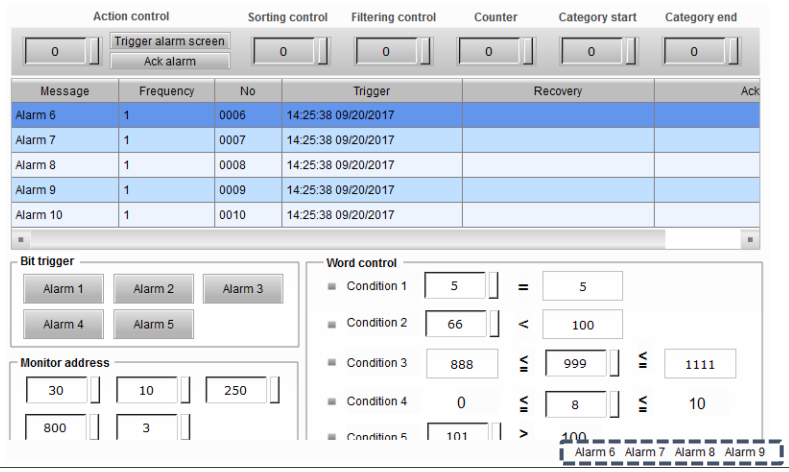
Property descriptions for [Alarm Settings] - Alarm Settings	
Read Address	■ Only applicable to continuous addresses. ■ Available options are internal memory and controller register address. ■ For connection name and element type selection, please refer to Chapter 5 Button Element in the DOP-100 user manual. Note: if you have created an alarm related element without setting the alarm read address, the software prompts a warning message shown in the figure below when data compiling. 
Scan Time (seconds)	[Scan Time] specifies the frequency to execute the sampling action. 

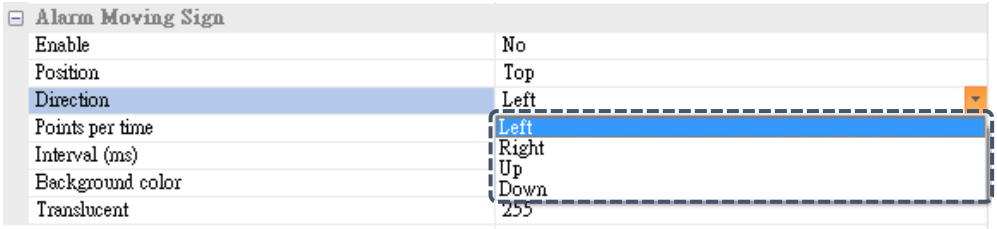
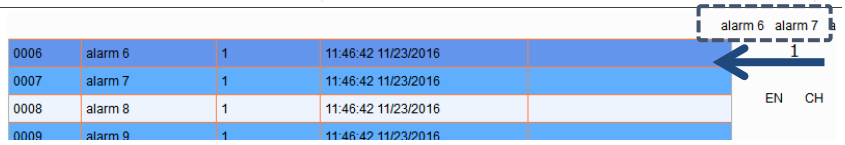
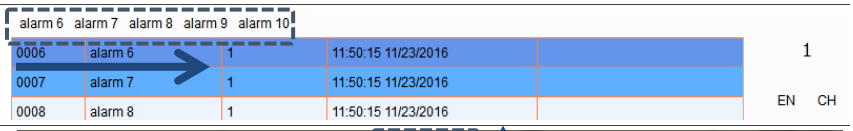
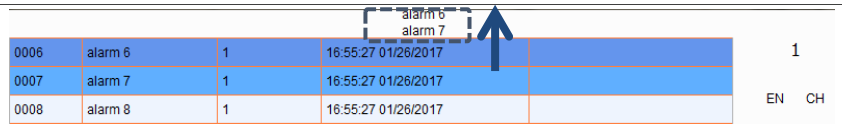
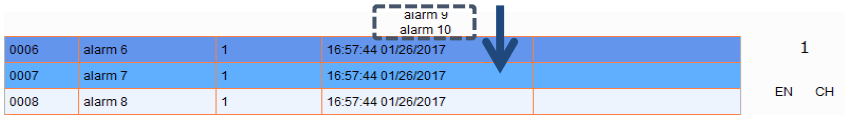
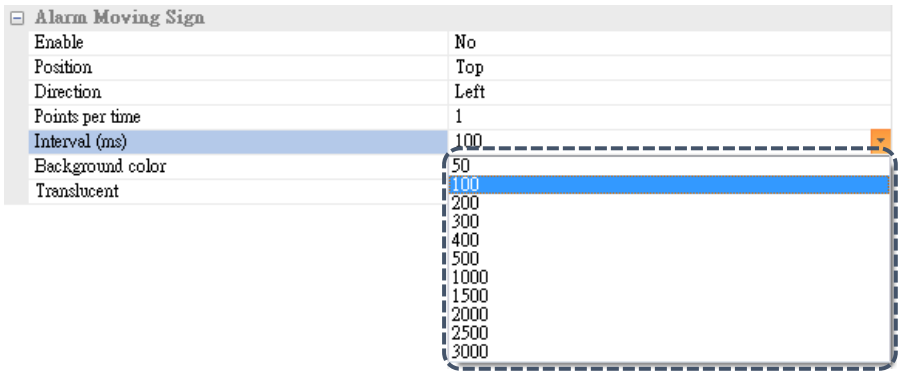
Property descriptions for [Alarm Settings] - Alarm Settings	
Max Records	■ [Max Records] is the recorded data. When the number of the recorded sampling points reaches the maximum, the record starts from 1 and overwrites the previous data. ■ The maximum savable data entry is 9,999. Note: 1. The maximum record must not be 0. 2. If you enter 0, the software prompts a warning as shown below. 
Non-volatile	■ Options for the storage location include None, HMI, USB Disk, and SD Card. ■ If you cannot use an SD Card on the model, it only shows the supported items, HMI and USB Disk; on the other hand, if you cannot use a USB Disk on the model, it only shows the supported items, HMI and SD Card.  ■ When you choose to store the data in the HMI, it means when the power is cut off, the data is saved in the HMI SRAM. ■ If [Export CSV File] is checked, please set the non-volatile memory to USB Disk or SD Card.
Export CSV File	Checking the box [Export CSV File] means you can save the alarm data as CSV files in the external storage devices, USB Disks or SD cards.

A	B	C	D	E	F	G	H	I	J	K	L	M
Group No.	Trigger Time		ACK Time		Recovery Time		Message					
1	2015/3/27	13:08:25			2015/3/27	13:08:27	alarm 1 30 度					
1	2015/3/27	13:08:25			2015/3/27	13:08:27	alarm 2 10 斤					
1	2015/3/27	13:08:25			2015/3/27	13:08:27	alarm 3 250 克					
1	2015/3/27	13:08:26			2015/3/27	13:08:27	alarm 4 800 尺					
1	2015/3/27	13:08:26			2015/3/27	13:08:28	alarm 5 3 吋					
1	2015/3/27	13:08:28			2015/3/27	13:08:31	alarm 1 30 度					
1	2015/3/27	13:08:29			2015/3/27	13:08:31	alarm 3 250 克					
1	2015/3/27	13:08:29			2015/3/27	13:08:30	alarm 5 3 吋					
1	2015/3/27	13:08:30			2015/3/27	13:08:31	alarm 2 10 斤					
1	2015/3/27	13:08:30			2015/3/27	13:08:31	alarm 4 800 尺					

Property descriptions for [Alarm Settings] - Alarm Settings	
Exit Screensaver when alarm occurs	■ This function is used with the screensaver. The default is “Enable”. ■ Assume that the screensaver is enabled and the screensaver image is set, the HMI does not show the screensaver image if alarm occurs; if the screensaver image is not set, the HMI does not enter the backlit mode. ■ Disable the function for [Exit Screensaver when alarm occurs], then the HMI exits the screensaver when the alarm is triggered the first time. After that, whether the alarm is cleared or not, the HMI enters the screensaver mode according to the set time. Example: 1. Create the alarm data.   2. Create a Numeric Entry element and set its address to $100. 3. Go to [Options] > [Configuration] > [Main] > [Others] to enable the screensaver and specify the waiting time as 1 minute. 4. Go to [Screen] > [Screensaver Setup] to specify the screensaver screen.  5. Compile the project and download to the HMI. Enter 1 for the Numeric Entry element of $100 to trigger the alarm. Wait for 1 minute to have the screensaver enabled, and when the HMI detects an alarm, it automatically cancels the screensaver.

Property descriptions for [Alarm Settings] - Alarm Settings	
Display alarm screen	It is categorized into Auto and Manual modes. ■ Auto: the HMI displays the alarm screen as soon as the alarm with a set alarm screen is triggered. ■ Manual: to have the HMI display the alarm screen, you must go to the [Details] page for the Alarm History Table element and enter 2 for the [Action Control Addr.]; or go to the [Function Button] page for the Alarm History Table element and use the [Trigger alarm screen] button.

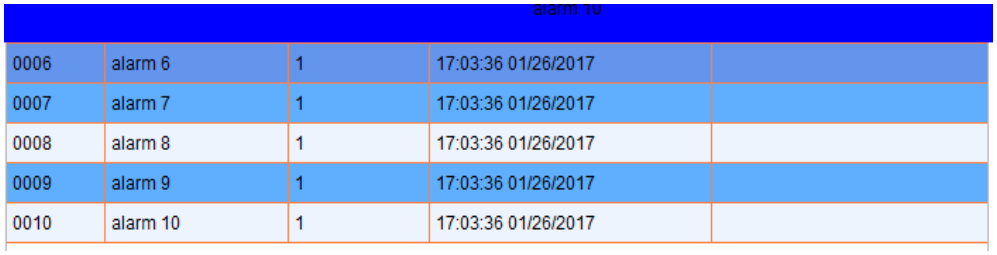
Property descriptions for [Alarm Settings] - Alarm Moving Sign	
Enable Trigger	You can use the **Yes** and **No** options to enable or disable this function. When the alarm is triggered, selecting **Yes** means the alarm message will show at the specified position on the screen whereas **No** means not to show the alarm message. 
Position	Available display positions are **Top** and **Bottom**. If you select **Top**, once the alarm is triggered, the alarm message shows at the top of the HMI screen; if you select **Bottom**, the alarm message shows at the bottom of the HMI screen.  **Top**  **Bottom** 

Property descriptions for [Alarm Settings] - Alarm Moving Sign	
Direction	Available directions are Left, Right, Up, and Down.  Left  Right  Up  Down 
Points per time	The more the points, the greater the text moving distance. The range is 1 - 50. The unit is Pixel.
Interval (ms)	The interval stands for the moving interval of the moving sign. Unit: ms. The moving distance is determined by the setting of [Points per time]. 

Property descriptions for [Alarm Settings] - Alarm Message Display Content

Background Color

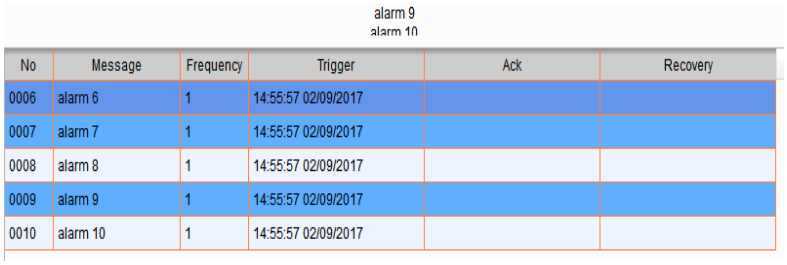
The background color of the alarm moving sign as shown in the figure below.
The default is white.



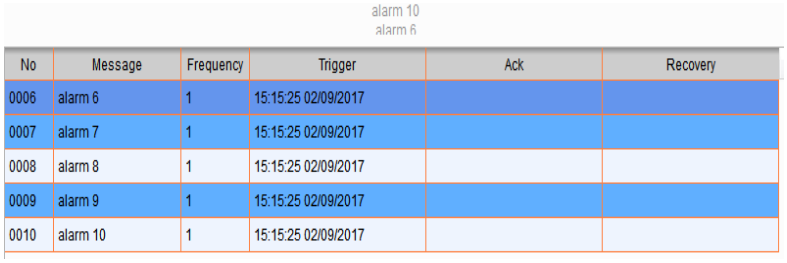
Translucent

Set the transparency level for the message of the alarm moving sign. The default is 255. The minimum is 0.

Set the value to 255

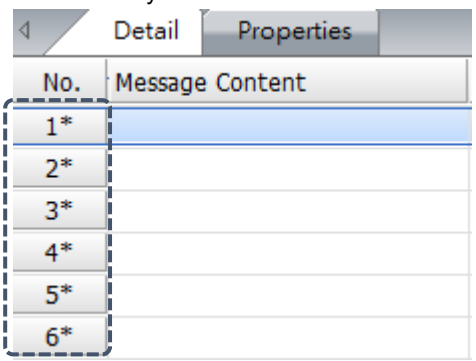


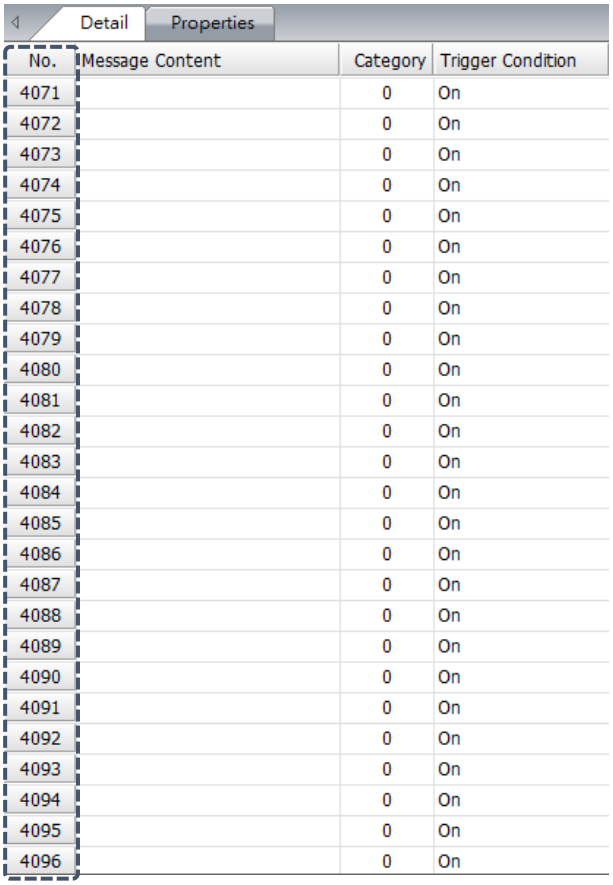
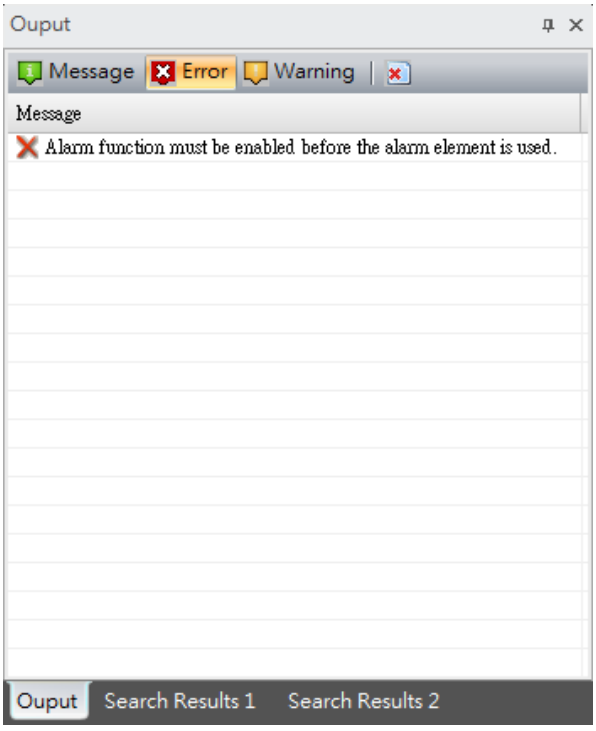
Set the value to 100

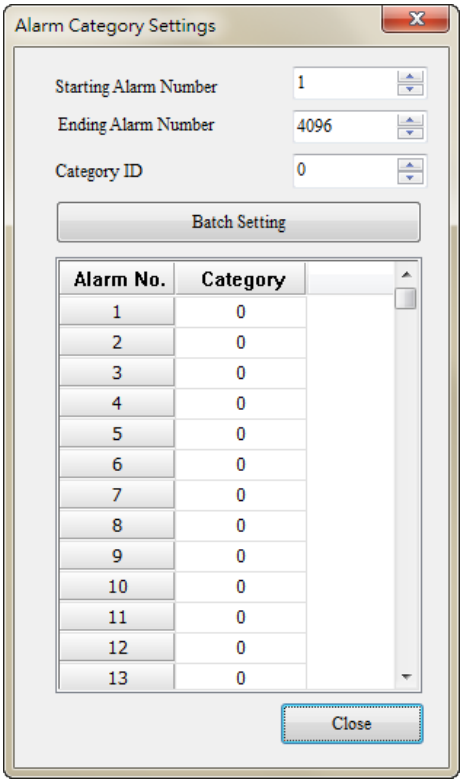


No.

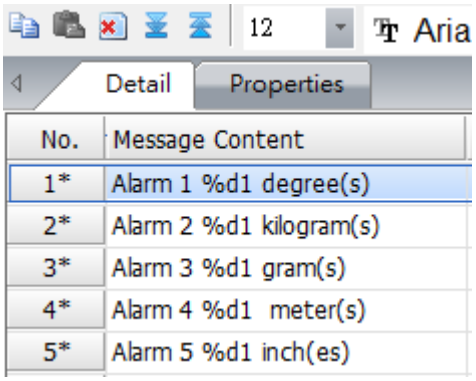
■ When you use the Backspace or Delete key to delete the message content or leave the content blank, the number is marked with an asterisk(*), reminding you that this alarm message exists unless you use to delete the alarm message.

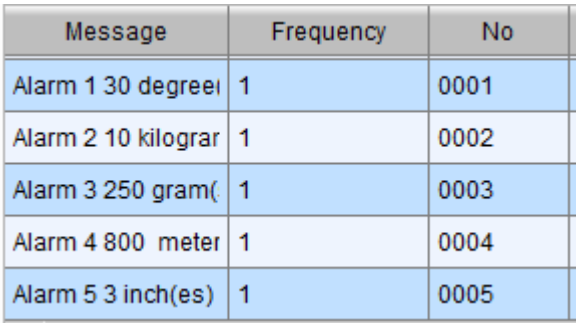
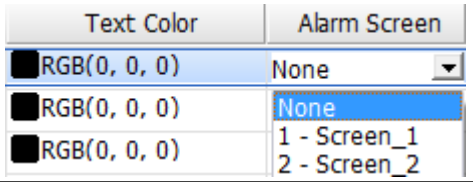


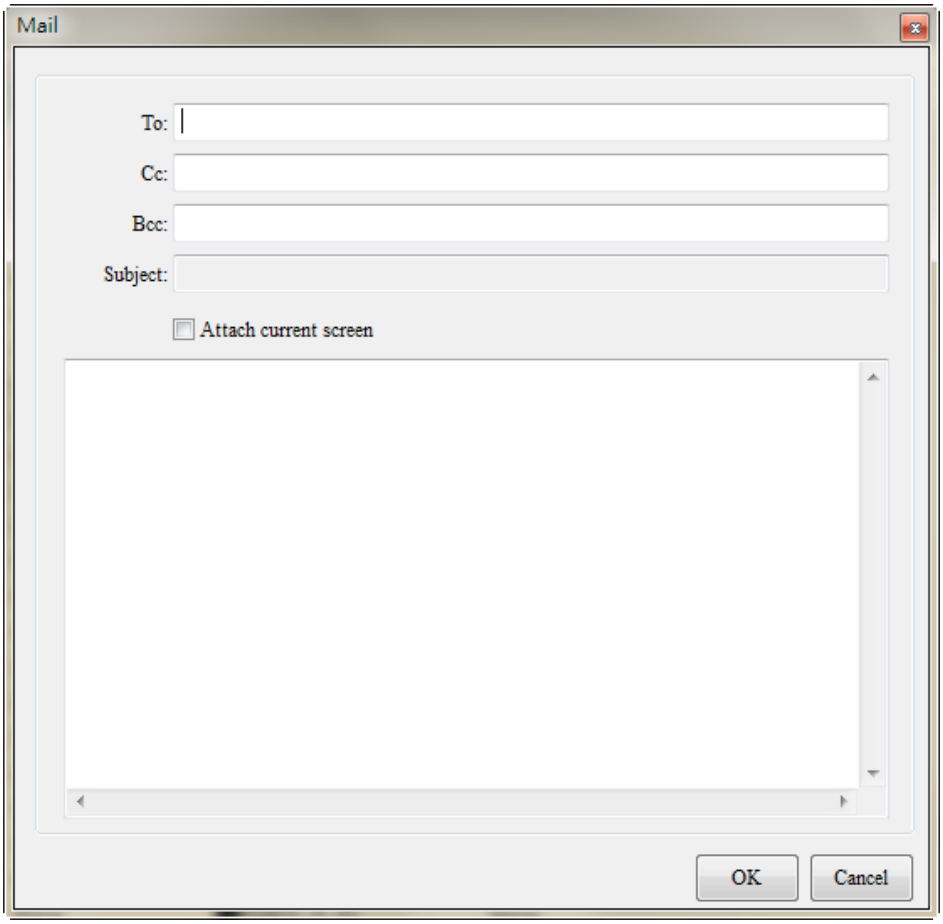
Property descriptions for [Alarm Settings] - Alarm Message Display Content	
No.	■ [No.] stands for the alarm message number, which maximum is 4096.  No. | Message Content | Category | Trigger Condition 4071 | 0 | On 4072 | 0 | On 4073 | 0 | On 4074 | 0 | On 4075 | 0 | On 4076 | 0 | On 4077 | 0 | On 4078 | 0 | On 4079 | 0 | On 4080 | 0 | On 4081 | 0 | On 4082 | 0 | On 4083 | 0 | On 4084 | 0 | On 4085 | 0 | On 4086 | 0 | On 4087 | 0 | On 4088 | 0 | On 4089 | 0 | On 4090 | 0 | On 4091 | 0 | On 4092 | 0 | On 4093 | 0 | On 4094 | 0 | On 4095 | 0 | On 4096 | 0 | On
Message Content	■ You can edit the alarm messages to display in the message field. ■ If you want to modify the message, you can modify it directly in the field. ■ Provide “%d1” formatted string suffixing to the message content, e.g. Alarm%d1. This string has to be used with monitoring addresses. Note: if you have created an alarm related element with alarm read address, but left the message content blank, the software prompts a warning message shown below when data compiling. 

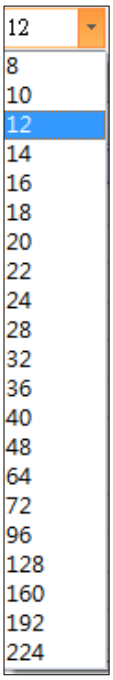
Property descriptions for [Alarm Settings] - Alarm Message Display Content	
Category	■ The category of the alarm number, which idea is similar to groups. ■ The supported range is 1 - 255. ■ You can use the batch tasks tool to quickly set the category numbers. ■ If you specify 1 as the [Starting Alarm Number] and 10 as the [Ending Alarm Number], set [Category ID] to 5, and click the batch tasks button, then Alarm 1 - 10 are defined as Group 5. 
Type	■ When the alarm continuous address button is canceled, this field shows up and the alarm read address is disabled. You can trigger the alarms individually depending on the alarm address type setting which is Bit or Word. ■ Available types are Bit and Word. ■ Bit address: user-defined Bit address for alarm triggering. ■ Word address: user-defined Word address for alarm triggering.
Address	■ When the alarm continuous address button is canceled, this field shows up and the alarm read address is disabled. You can trigger the alarms individually depending on the alarm address type setting which is Bit or Word. ■ You can set the corresponding addresses to trigger the alarms according to the setting types (Bit or Word). ■ If you select Bit, please enter the Bit address for alarm triggering. ■ If you select Word, please provide statements for determining whether to trigger the alarm.

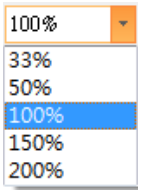
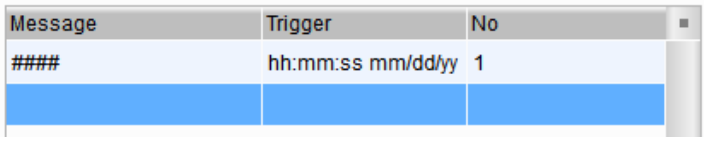
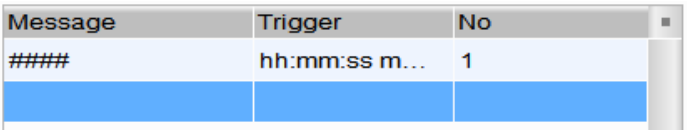
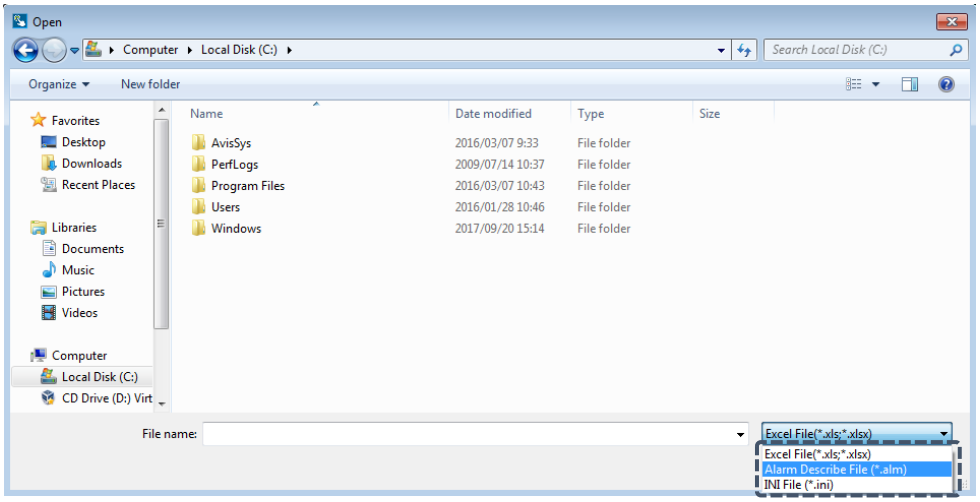
Statement	Trigger timing
=	Equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
> , <	Out of the range
<= , <=	Within the range

<table>
<tr><th colspan="2">Property descriptions for [Alarm Settings] - Alarm Message Display Content</th></tr>
<tr><td>Trigger Condition</td><td>The trigger conditions are on and off. If you select on, it means the alarm is triggered when the bit is on; if you select off, it means the alarm is triggered when the bit is off.</td></tr>
<tr><td>Monitoring Address</td><td>■ [Monitoring Address] is for displaying the user-defined alarm messages.
■ Suffix the string “%d1” to the input message in the message field. Take message “Alarm” as example, when the monitoring address is 10, the Alarm History Table displays “Alarm 10”.
Alarm message setting:
 

Execution result:
 
</td></tr>
<tr><td>Text Color</td><td>The alarm message text color to display. The default is black.</td></tr>
<tr><td>Alarm Screen</td><td>Set whether to show the specified alarm screen when the alarm is triggered. If you have created other screens, use the drop-down list to select the screen number to display.
 
</td></tr>
</table>

Property descriptions for [Alarm Settings] - Alarm Message Display Content	
Mail	■ When an alarm occurs, the [Mail] function sends a mail to relevant recipients. Please note that you must go to [Options] > [Configuration] > [Network Settings] to enable the [SMTP] function to have the mail work. ■ After the SMTP function is enabled, you can enter the mail content in the mail data fields.  **Recipient**: please fill in the recipient's email address for receiving the notification when an alarm occurs. Same as email boxes, you can fill in multiple recipients by using semi-columns to separate the recipients' email addresses. **Cc**: apart from the main recipients, you can also send alarm notifications to other recipients by entering their email addresses in this field. Please note that main recipients can see those who are in the Cc. field. **Bcc:** send blind copies to the recipients. The main and Cc. recipients cannot see those who are in the Bcc. field in the alarm notification. **Subject:** it is not editable in the [Mail] screen. The subject is generated based on the alarm message content. To modify the subject, please go to the message field to change the display message. **Attach current screen:** if you check this checkbox, the current alarm screen is attached in this mail and sent to the recipients. The attachment is in .bmp format. **Content:** users can enter the mail content. This content supports "%d1" formated string, which has to be used with monitoring addresses.

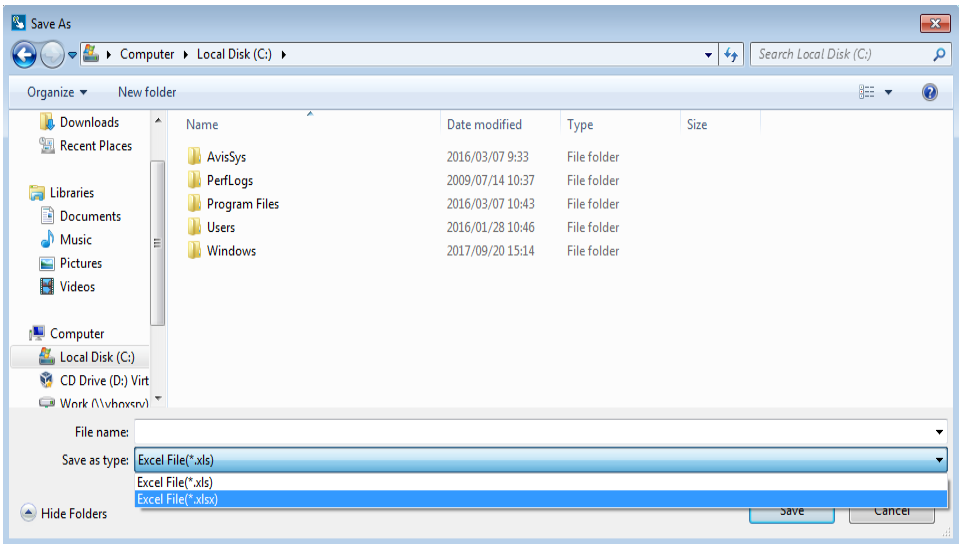
Property descriptions for [Alarm Settings] - Alarm Message Text Properties	
Copy	■ Support single and multiple copy functions. ■ Use the **Ctrl** key to select the alarm number to copy and use the **Shift** key to select a range of alarm numbers to copy.
Paste	The paste icon is available after you click the copy icon. It supports single and multiple paste functions.
Delete	After you created the alarm message, you can select the message to be deleted and click the delete button to complete the deletion. Note: if you enter the message in the [Message] field and then move on to the next row, it means you have created a new alarm message. Next, if you delete this alarm message with the **Delete** or **Backspace** key on the keyboard instead of the delete button , the HMI shows the blank alarm at the specified position after you exit [Alarm Settings] and download the screens to the HMI.
Font	The alarm message font to display. It is user-defined.
Size	The alarm message text size to display. 

Property descriptions for [Alarm Settings] - Alarm Message Text Properties	
Zoom in / out	If you have set the zooming function, you can see the zooming effect on the title and text. The default is 100%.  100%  150% 
Next 2048 entries	When you click , it shows alarm No. 2049 - 4096.
Previous 2048 entries	When you click , it shows alarm No. 1 - 2048.
Import	Users can click the import button to import the alarm data. Supported file formats are .xls, .xlsx, .alm, and .ini. 

Property descriptions for [Alarm Settings] - Alarm Message Text Properties

Export

■ Users can export the edited alarm messages. Supported file formats are .xls and .xlsx.



■ For the editable alarm parameters, apart from alarm messages, the alarm mail and alarm properties are also included.

O	P	Q	R	S	T
[Mail To]	[CC]	[BCC]	[AttachScreen]	[Language1 Mail Content]	[Language2 Mail Conte
收件者	副本	密件副本	附件加入警報畫面	[Language1 郵件內容]	[Language2 郵件內容]
			0		
			0		
			0		
			0		
			0		
			0		
			0		
			0		
			0		
			0		
			0		

1

Export

	A	B	C	D
1	[Language]	[Font]	[Size]	[Ratio]
2		字型	大小	縮放
3	Language1	Arial	12	100
4	Language2	Arial	12	100
5				
6	Alarm Setting	位址		
7	Address	讀取位址	None	
8	Scan Time	取樣週期(秒)	0.500000	
9	Max Records	最多可存筆數	9999	
10	Hold	啟用斷電保持	1	
11	Hold Place	斷電保持於	0	
12	CSV	輸出CSV	0	
13	Exit Screen Saver	警報發生時離開螢幕保	1	
14	Screen Display Mode	警報畫面顯示	1	
15	Continue Address	警報位址連續	0	
16				
17	Alarm Moving Sign	警報走馬燈		
18	Enable	啟動	1	
19	Position	視屏顯示位置	0	
20	Direction	移動方式	3	
21	Moving Points	每次移動點數	1	
22	Interval	間隔時間(毫秒)	100	
23	BackgroundColor	背景顏色	RGB(252,252,252)	
24	Opacity	半透明	255	

12.1 Alarm History Table

The Alarm History Table is different from the previous alarm record. For easier viewing of the table, alarm trigger time, alarm acknowledge time, and alarm recovery time are added, so that the alarm triggered and recovered times are listed in the same table.

No	Message	Frequency	Trigger	Ack	Recovery
0006	alarm 6	1	18:00:57 02/09/2017		18:01:02 02/09/2017
0007	alarm 7	1	18:00:57 02/09/2017		
0008	alarm 8	1	18:00:57 02/09/2017	18:01:16 02/09/2017	
0009	alarm 9	1	18:00:57 02/09/2017	18:01:18 02/09/2017	18:01:24 02/09/2017
0010	alarm 10	1	18:00:57 02/09/2017		

You can also sort the alarms, set filter conditions, and use other functions to determine the displayed alarms. To enhance the readability of the data, you can filter the information you want to see and sort in ascending or descending order.

Please refer to Table 12.1 [Alarm Settings] example for the Alarm History Table setting example.

The following figure shows the property setting screen when you double-click the Alarm History Table.

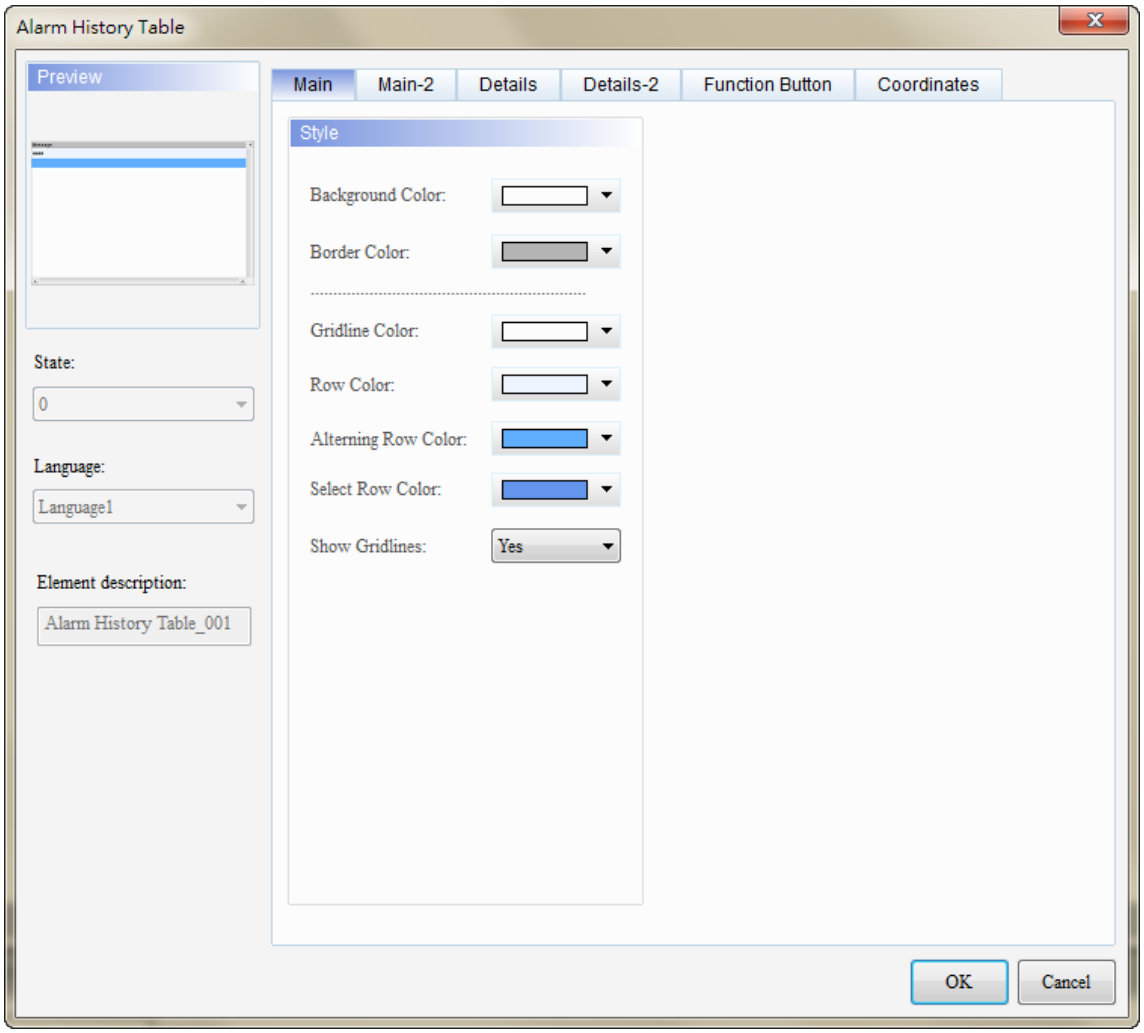


Figure 12.1.1 Properties of the [Alarm History Table]

Table 12.1.1 Function page for the [Alarm History Table]

Alarm History Table	
Function page	**Description**
Preview	Alarm History Table elements do not support multiple status values and multi-language data display.
Main	Set the [Background Color], [Border Color], [Gridline Color], [Row Color], [Alternating Row Color], [Select Row Color], and [Show Gridlines] of the elements.
Main-2	Set the [Transparent], [Animation], and [Anti-aliasing].
Details	Set the [Action Control Addr.] of the event; check the [Use header controls to sort], set the [Sorting Control Addr.] and sort in ascending or descending order; set the [Filter control address], [Alarm counter display] address, [Alarm category start addr.], and [Alarm category end addr.].
Details-2	Set the displaying alarm columns, width, description, and the order of the columns. Set the [Title Text Alignment], [Title Background] color, [Title Text Color], and format / color of the date / time.
Function Button	Set the Event control function button by checking the [Trigger alarm screen] and [Ack alarm]; set the displaying texts and default width / height of the buttons.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

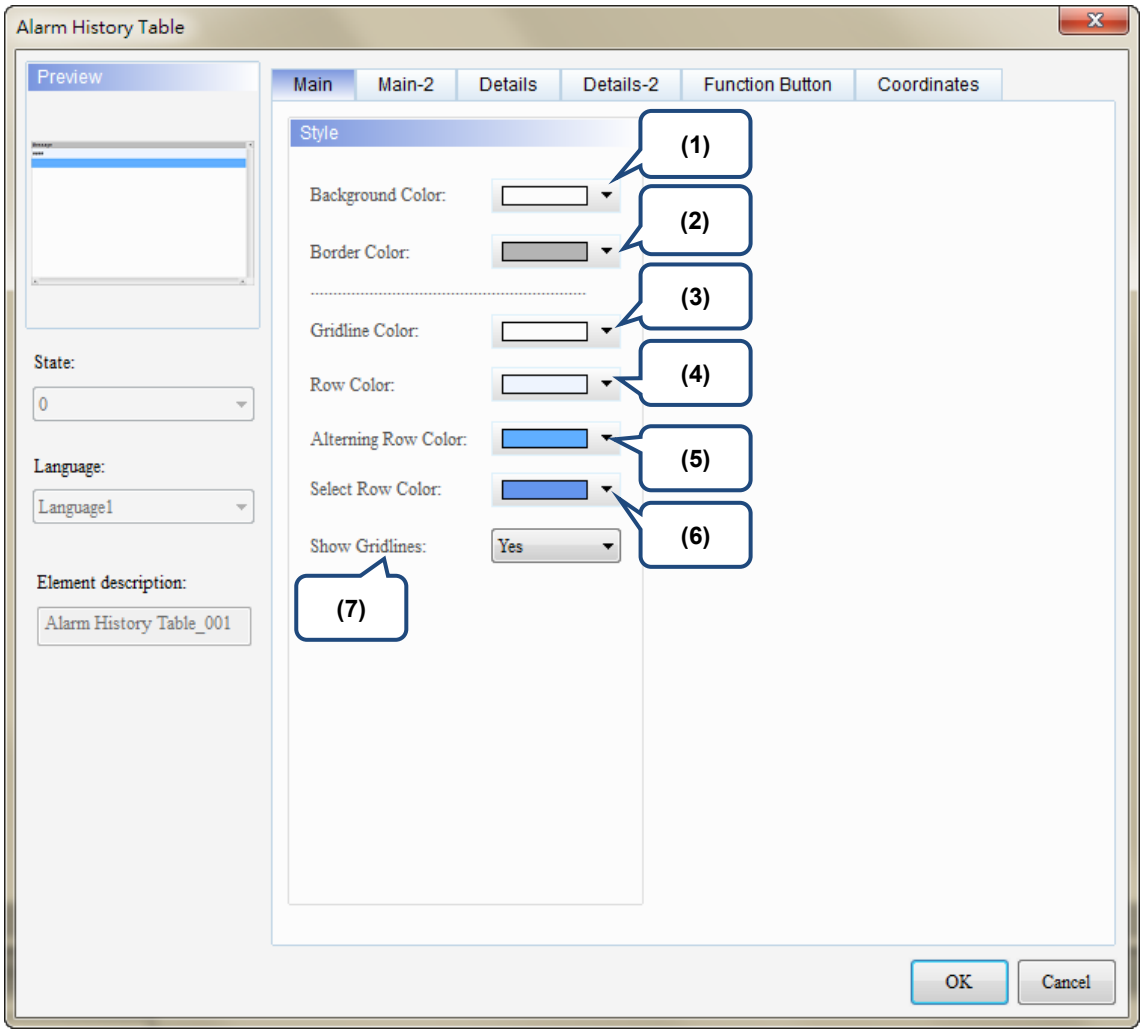
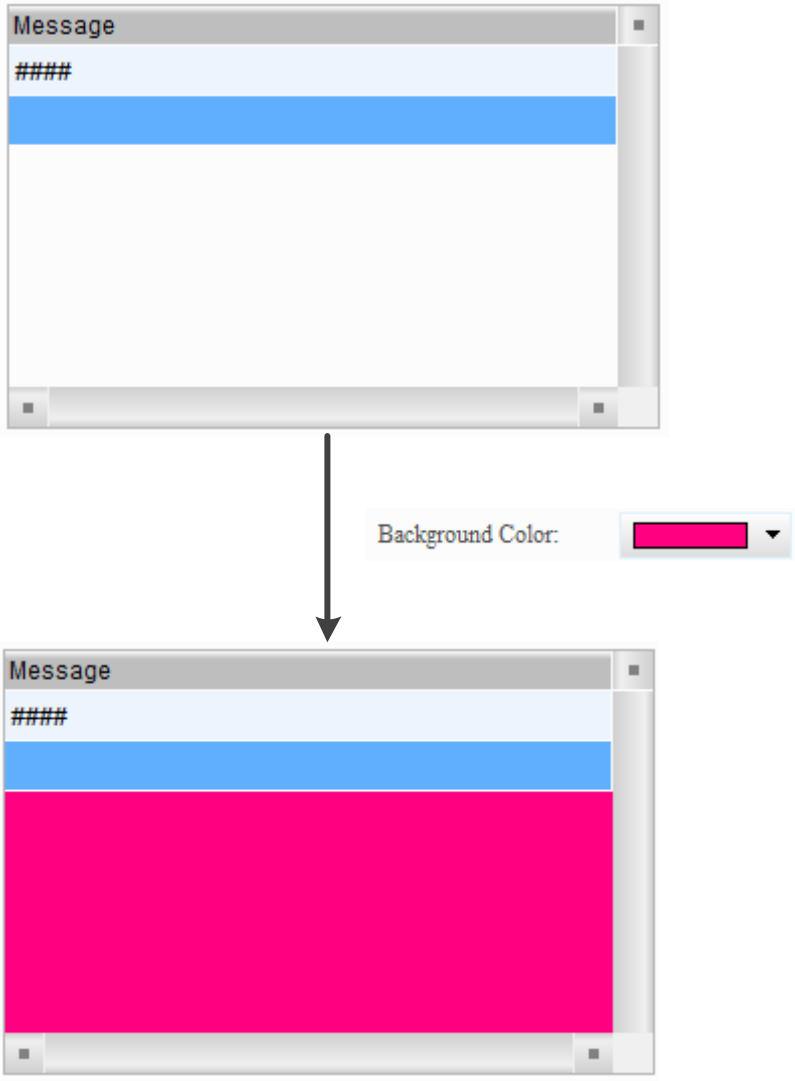
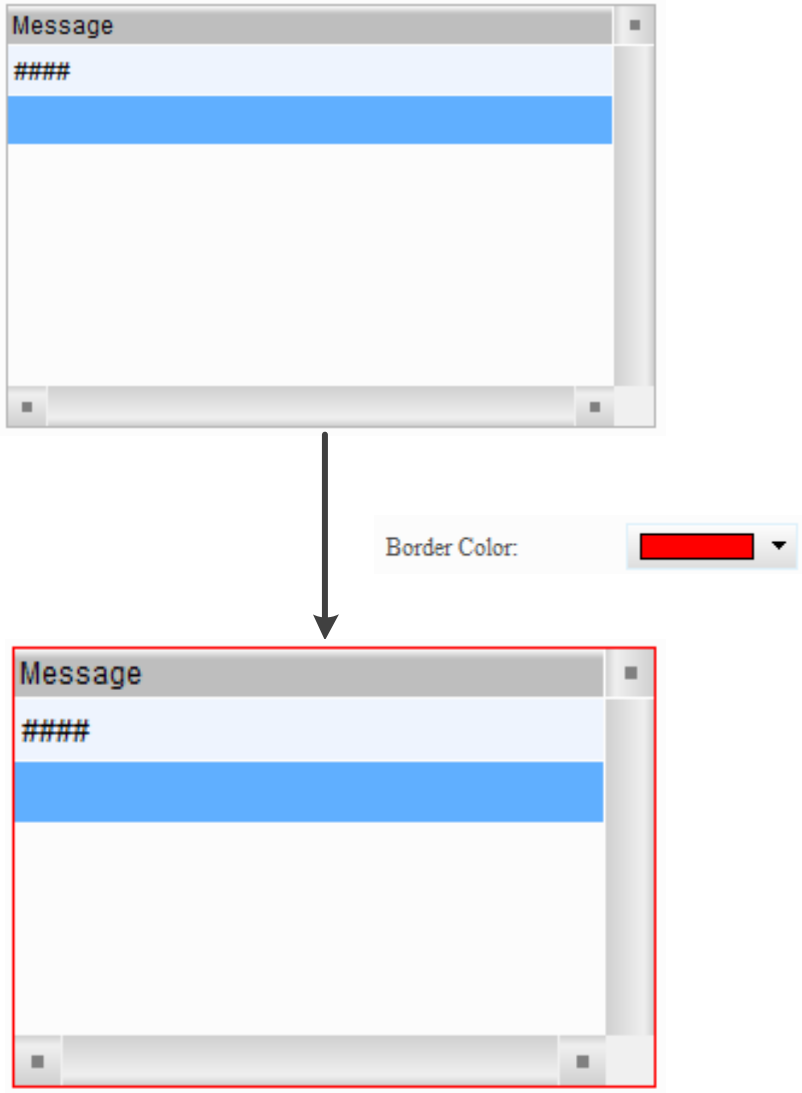
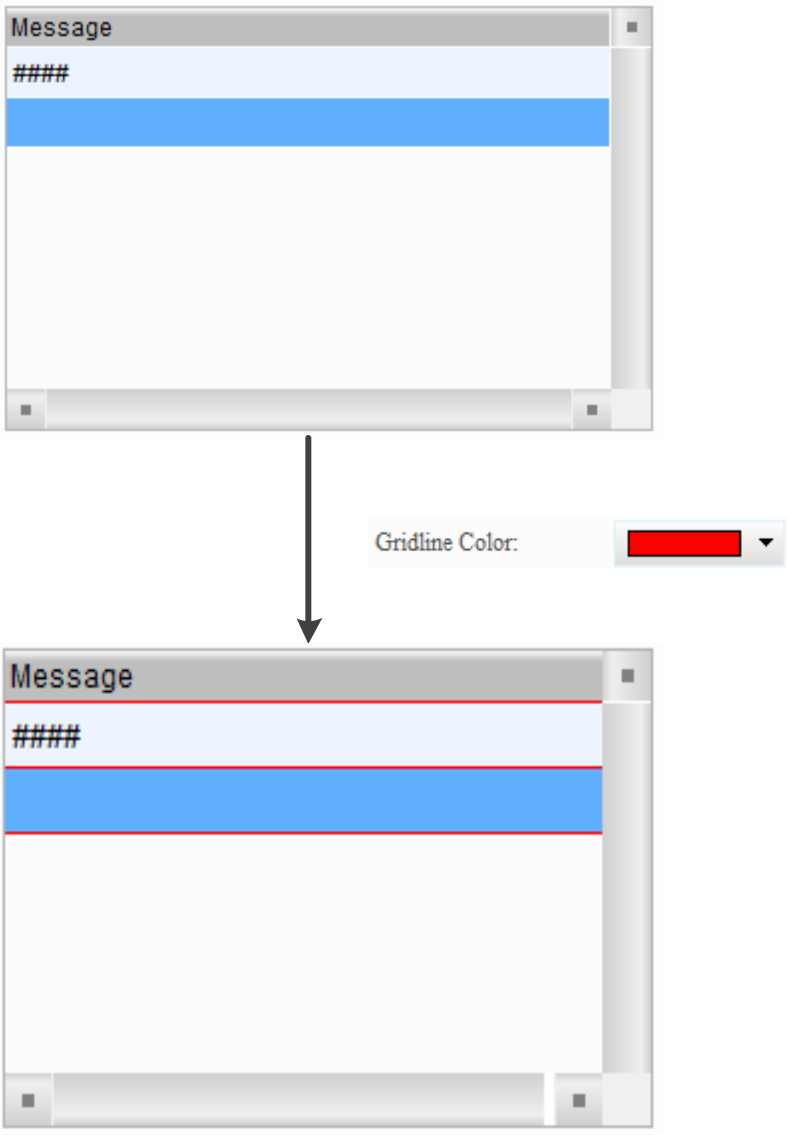
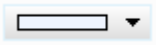
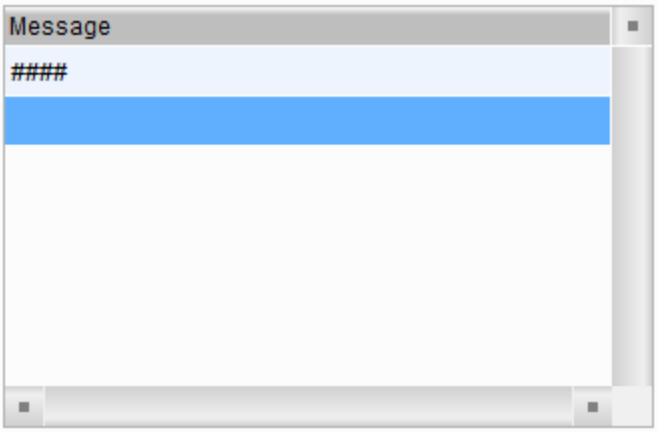
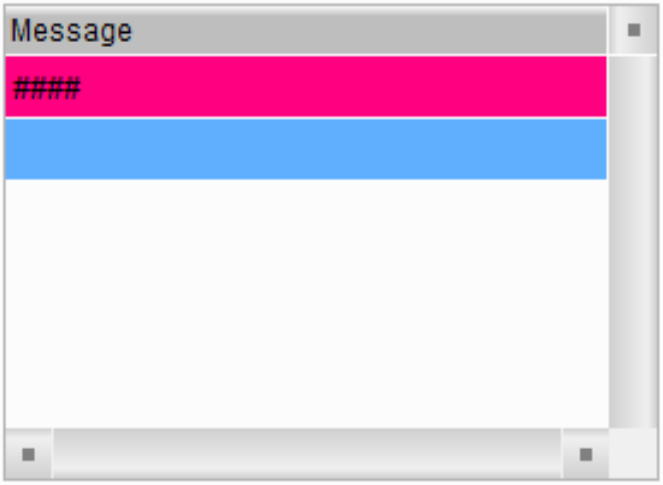


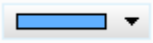
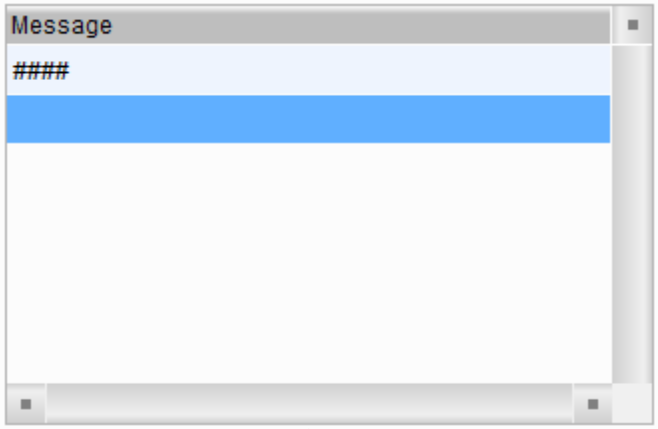
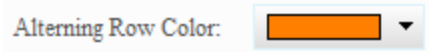
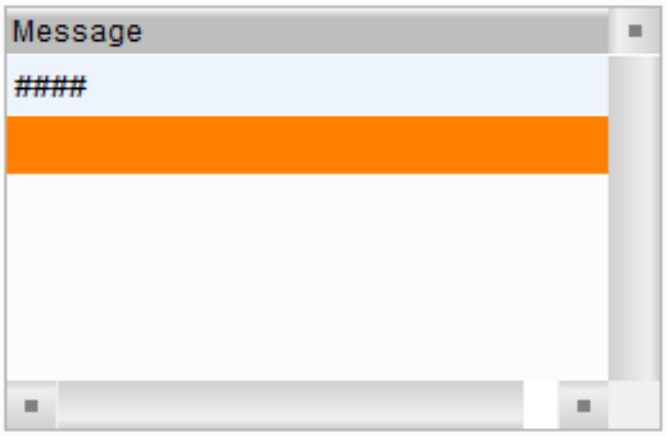
Figure 12.1.2 [Main] property page for the Alarm History Table element

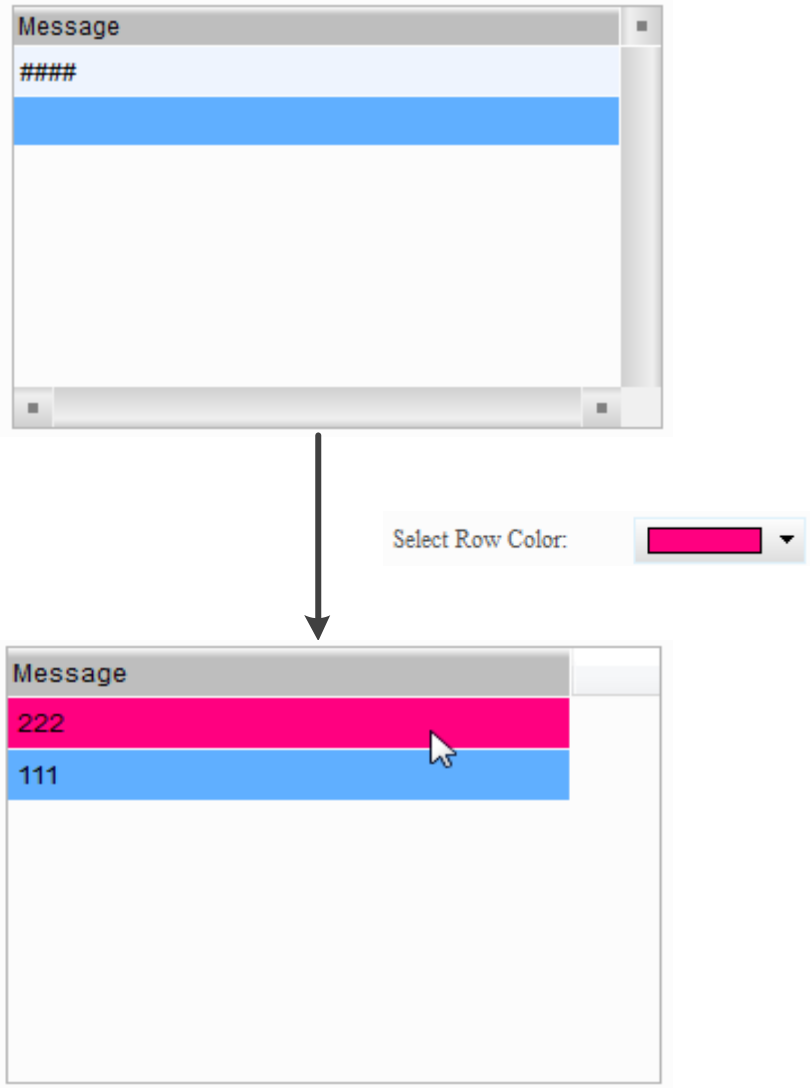
No.	Property	Function description
(1)	Background Color	Set the background color of the element. The default is white. 

No.	Property	Function description
(2)	Border Color	Set the border color of the element. The default is gray. 

No.	Property	Function description
(3)	Gridline Color	■ The [Gridline Color] setting is valid only when you select **Yes** for [Show Gridlines]. ■ Set the gridline color of the element. The default is white. 

No.	Property	Function description
(4)	Row Color	Set the color for each row of the alarm. The default is  .  

No.	Property	Function description
(5)	Alternating Row Color	Set the color for the alternating row of the alarm. The default is  .   

No.	Property	Function description
(6)	Select Row Color	■ The row color when you select an alarm history data. ■ Set the color of the selected row. The default is . 
(7)	Show Gridlines	The default is **Yes**. When you select **No**, the [Gridline Color] setting is invalid.

■ Main-2

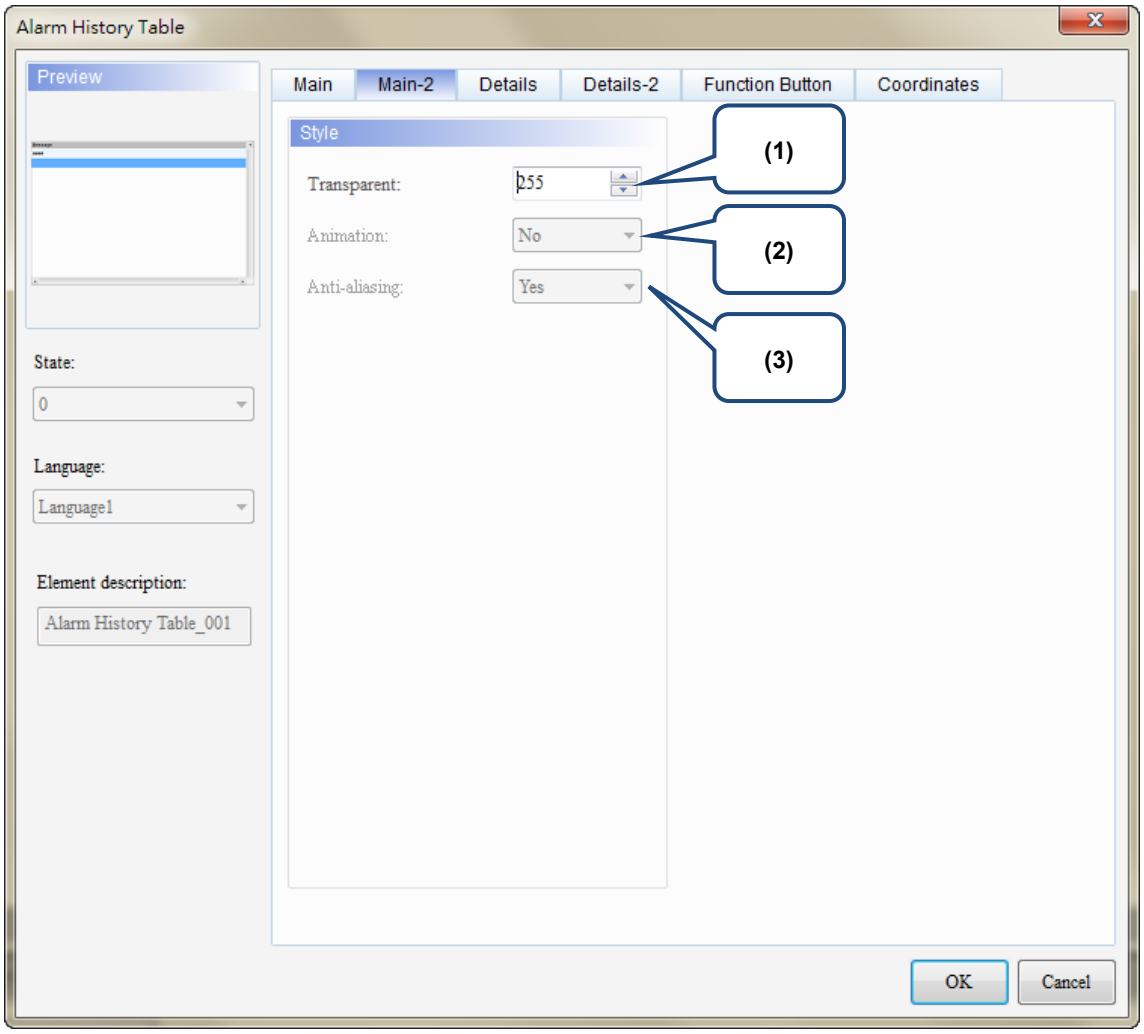


Figure 12.1.3 [Main-2] property page for the Alarm History Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Animation	The [Animation] function is not available for this element.
(3)	Anti-aliasing	The [Anti-aliasing] function is not available for this element.

■ Details

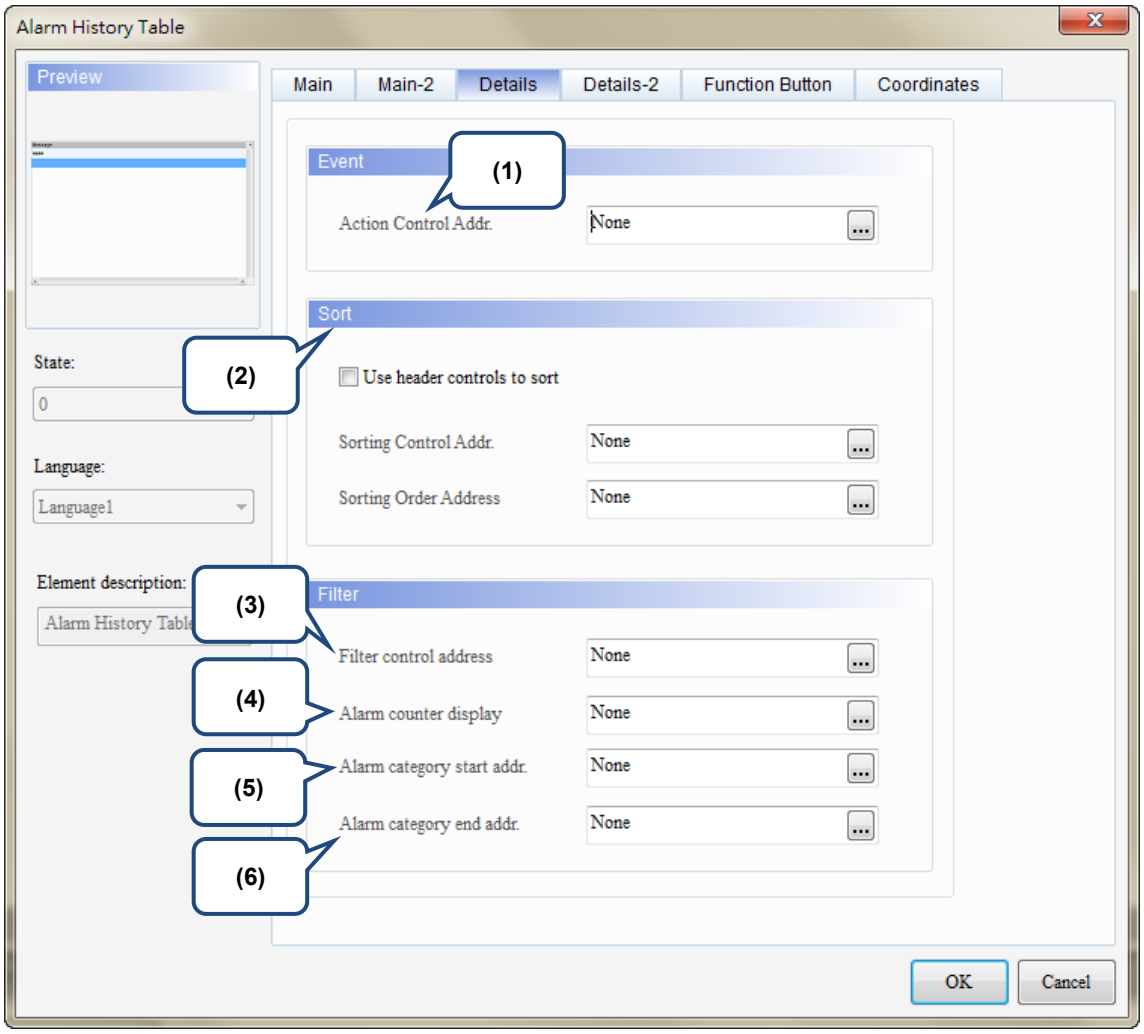
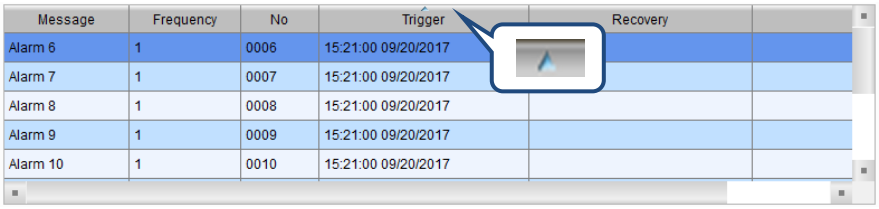


Figure 12.1.4 [Details] property page for the Alarm History Table element

No.	Property	Function description
(1)	Action Control Addr.	You can specify the alarms to change screens or acknowledge the alarms with the [Action Control Addr.] setting. Value: 0 — Description: Default; no actions. Value: 1 — Description: Acknowledge the selected alarms in the Alarm History Table. Value: 2 — Description: If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td>(2)</td><td>Sorting Control Addr.</td><td>
■ When you check the [Use header controls to sort], you can press the Alarm History Table header to sort the alarms in ascending or descending order. Once you check this function, you cannot set the [Sorting Control Addr.] and [Sorting Order Address].


■ [Use header controls to sort] does not support the sorting of the Message column.
■ You can specify the item for sorting with the [Sorting Control Addr.].
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Default; no sorting.</td></tr>
<tr><td>1</td><td>Sort by Trigger Time.</td></tr>
<tr><td>2</td><td>Sort by Acknowledge Time.</td></tr>
<tr><td>3</td><td>Sort by Recovery Time.</td></tr>
<tr><td>4</td><td>Sort by the alarm count.</td></tr>
<tr><td>5</td><td>Sort by the alarm category.</td></tr>
<tr><td>6</td><td>Sort by the alarm No.</td></tr>
</table>
■ The [Sorting Order Address] determines the ascending or descending order of the item specified in the [Sorting Control Addr.]. For example, if you set the [Sorting Control Addr.] to 1 and the [Sorting Order Address] to 0, the trigger time is sorted in ascending order.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Sort in ascending order.</td></tr>
<tr><td>1</td><td>Sort in descending order.</td></tr>
</table>
</td></tr>
<tr><td>(3)</td><td>Filter control address</td><td>
You can filter the specified item with the [Filter control address].
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Default; display all triggered alarms.</td></tr>
<tr><td>1</td><td>Hide the alarms with Recovery Time and Acknowledge Time.</td></tr>
<tr><td>2</td><td>Hide the alarms with Recovery Time.</td></tr>
<tr><td>3</td><td>Hide the alarms with Recovery Time or Acknowledge Time.</td></tr>
<tr><td>4</td><td>Hide the alarms with Acknowledge Time.</td></tr>
<tr><td>5</td><td>This setting must be used with the [Alarm counter display].
When the displayed alarm count is smaller than the value set in the [Alarm counter display], the alarm is hidden.</td></tr>
<tr><td>6</td><td>This setting must be used with the [Alarm category start addr.] and [Alarm category end addr.]. When the alarm category number is not within the range set by these two addresses, the alarm is hidden.</td></tr>
</table>
</td></tr>
<tr><td>(4)</td><td>Alarm counter display</td><td>
■ This setting must be used with the [Filter control address].
■ When the [Filter control address] is set to 5, input the value of the alarm count.
<table>
<tr><th>Example</th><th>Description</th></tr>
<tr><td>Triggered alarms with alarm counts of 1, 2, and 3 times</td><td>If you input 1, the Alarm History Table displays the triggered alarms with 1 or more alarm counts; if you input 2, the Table displays the triggered alarms with 2 or more alarm counts; if you input 3, the Table displays the triggered alarms with 3 or more alarm counts.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td rowspan="2">(5)</td><td rowspan="2">Alarm group start addr.</td><td rowspan="2">■ This setting must be used with the [Filter control address].
■ When the [Filter control address] is set to 6, input the alarm category number.
<table><tr><th>Example</th><th>Description</th></tr><tr><td rowspan="2">Alarms with alarm category number 1 and 5</td><td>When you input 1 to the [Alarm group start addr.] and 3 to the [Alarm group end addr.], the Alarm History Table displays the category 1 triggered alarms;</td></tr><tr><td>When you input 1 to the [Alarm group start addr.] and 5 to the [Alarm group end addr.], the Alarm History Table displays the category 1 and 5 triggered alarms.</td></tr></table></td></tr>
<tr><td>(6)</td><td>Alarm group end addr.</td></tr>
</table>

PLC1

■ Details-2

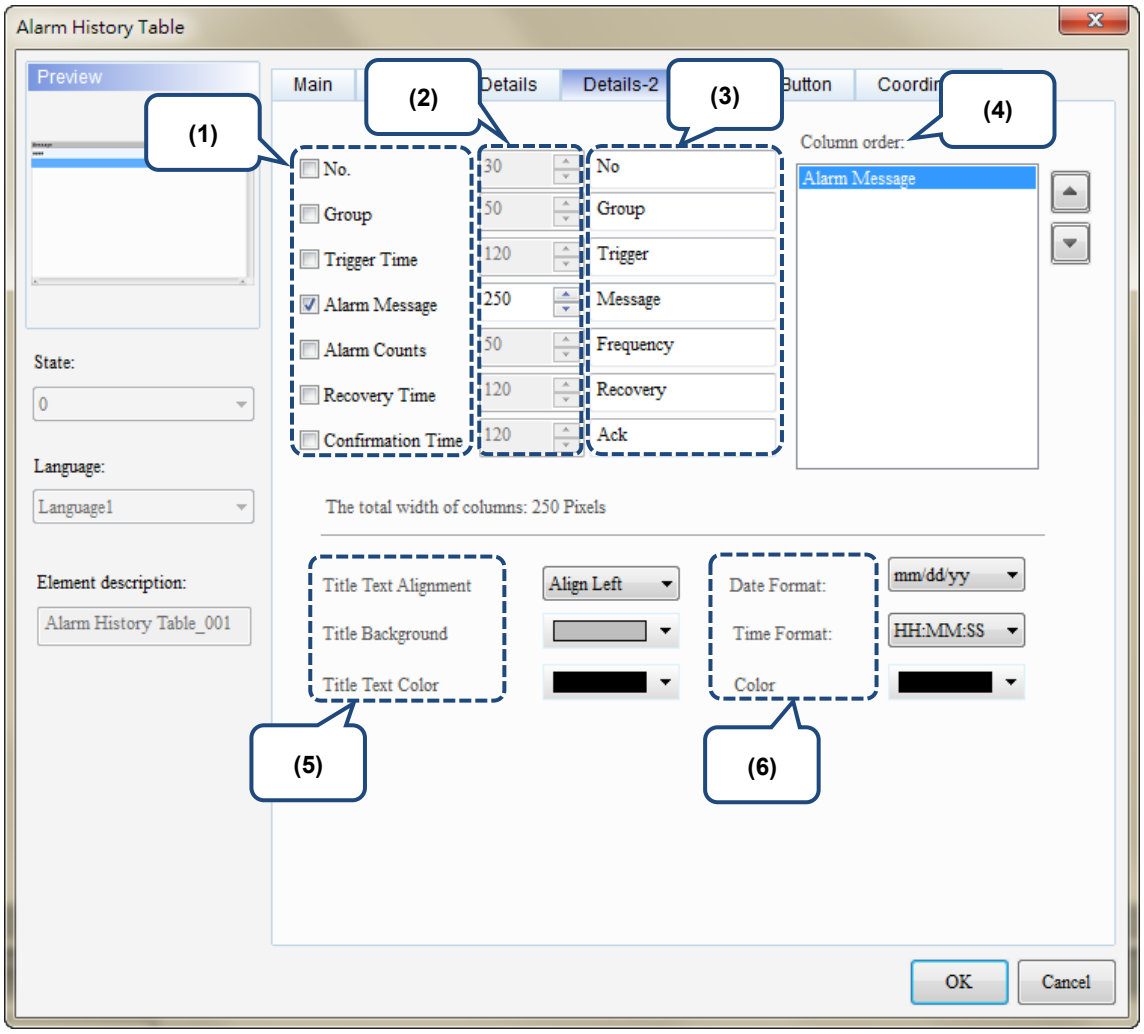
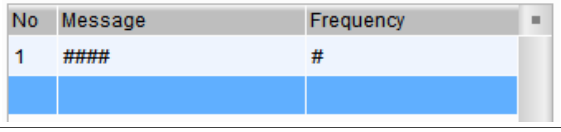
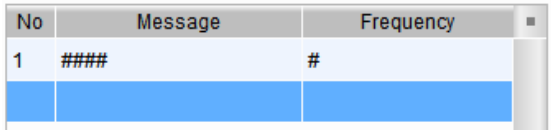
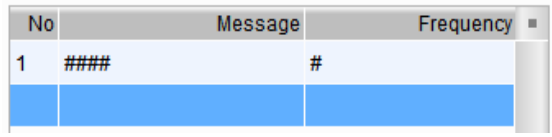
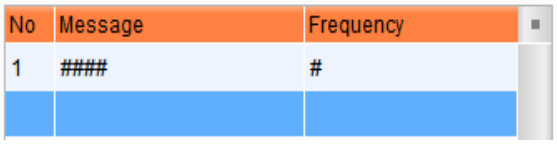
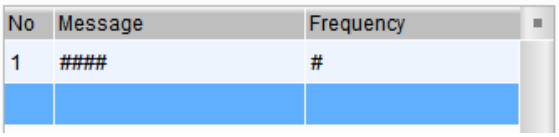
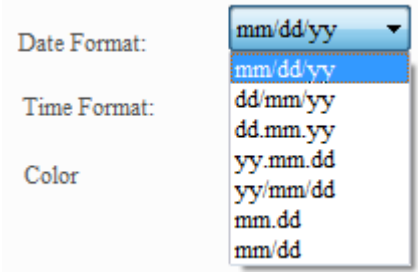
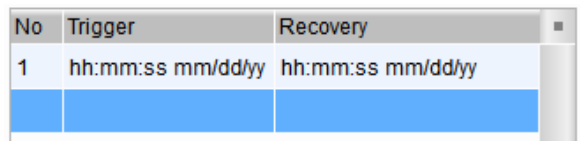
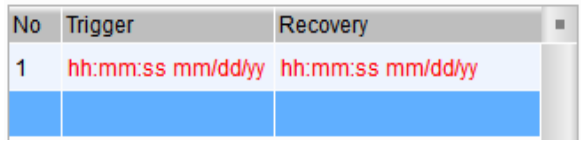


Figure 12.1.5 [Details-2] property page for the Alarm History Table element

No.	Property	Function description	
(1)	Column display	Check the columns you want to display in the element.	
(2)	Column width	You can adjust the width for each column.	
(3)	Column title	You can define the titles for each column.	
(4)	Column order	After checking the columns you want to display, you can use the and buttons to adjust the column displaying order.	
(5)	Title	Text Alignment	Set the column title to align left, center, or right. Align Left  Center  Align Right 

<table>
<tr><th>No.</th><th>Property</th><th colspan="2">Function description</th></tr>
<tr><td rowspan="4">(5)</td><td rowspan="4">Title</td><td rowspan="2">Back-ground</td><td>Set the background color of the column title.
Default

After change
  </td></tr>
<tr><td rowspan="2">Text Color</td><td>Set the text color of the column title.
Default
 
After change
 </td></tr>
<tr><td rowspan="3">(6)</td><td rowspan="3">Date and time</td><td>Date Format</td><td>Select the display format for the date from the following options.
  </td></tr>
<tr><td>Time Format</td><td>Select the display format for the time from the following options.
 </td></tr>
<tr><td>Color</td><td>Set the displaying color of the date and time.
Default
 
After change
  </td></tr>
</table>

■ Function Button

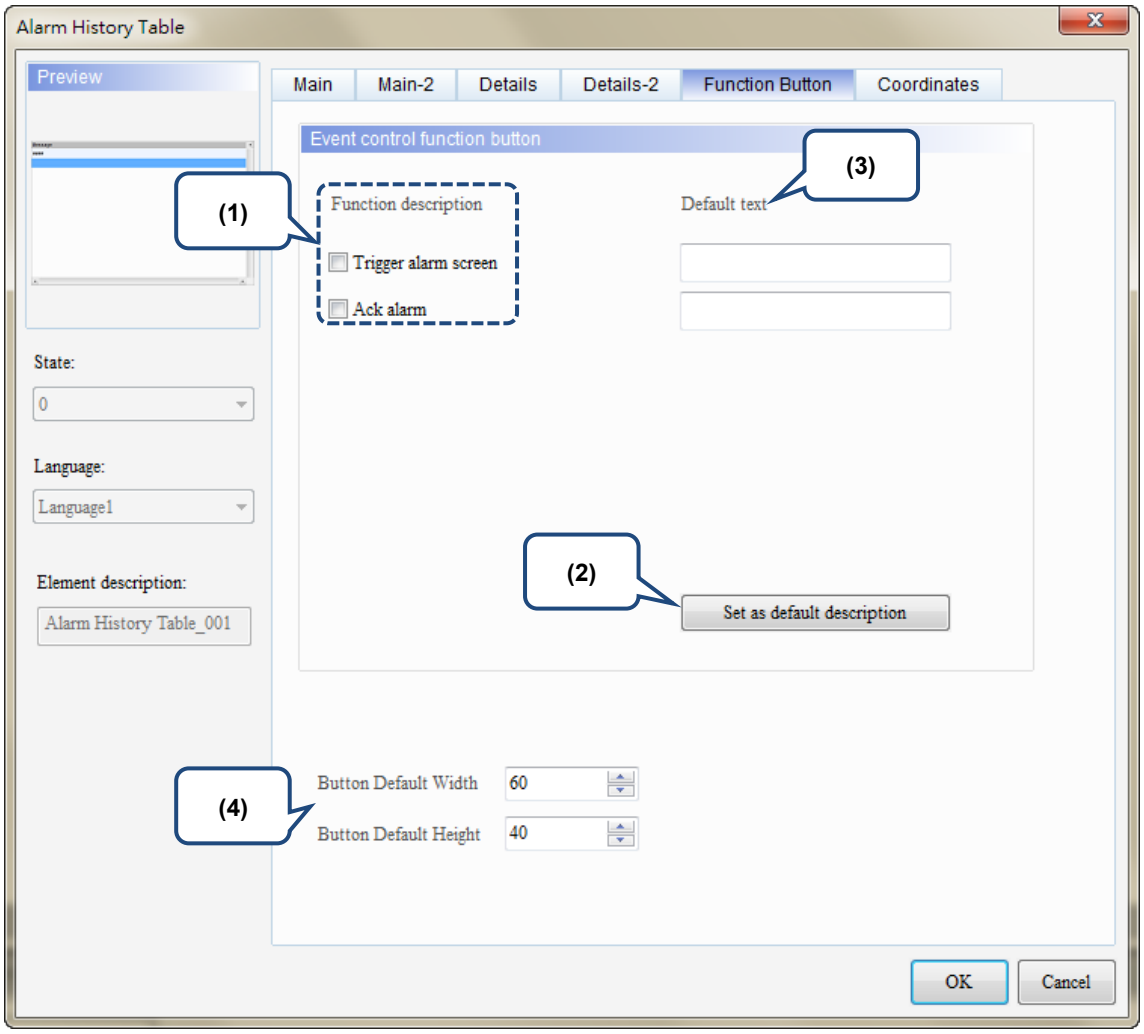


Figure 12.1.6 [Function Button] property page for the Alarm History Table element

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td>(1)</td><td>Function Button</td><td>■ Two button options are provided for the Event control function button: [Trigger alarm screen] and [Ack alarm].
■ By triggering with the function buttons, it is easier to edit the screen. You can use the functions provided by the event control address without setting the address and value.
<table>
<tr><th>Value</th><th>Function Button</th><th>Description</th></tr>
<tr><td>0</td><td colspan="2">Default; no actions.</td></tr>
<tr><td>1</td><td>Ack alarm</td><td>Acknowledge the selected alarms in the Alarm History Table.</td></tr>
<tr><td>2</td><td>Trigger alarm screen</td><td>If the selected alarm in the Alarm History Table has a set alarm screen which is set to display manually, the alarm screen is displayed when the value is 2.</td></tr>
</table></td></tr>
<tr><td>(2)</td><td>Set as default description</td><td>Click this button to insert the default texts to the spaces above.</td></tr>
<tr><td>(3)</td><td>Default text</td><td>Click Set as default description to insert the default texts to the spaces. You can also enter user-defined texts.</td></tr>
<tr><td>(4)</td><td>Button Default Width and Height</td><td>You can adjust the width and height of the function buttons.</td></tr>
</table>

■ Coordinates

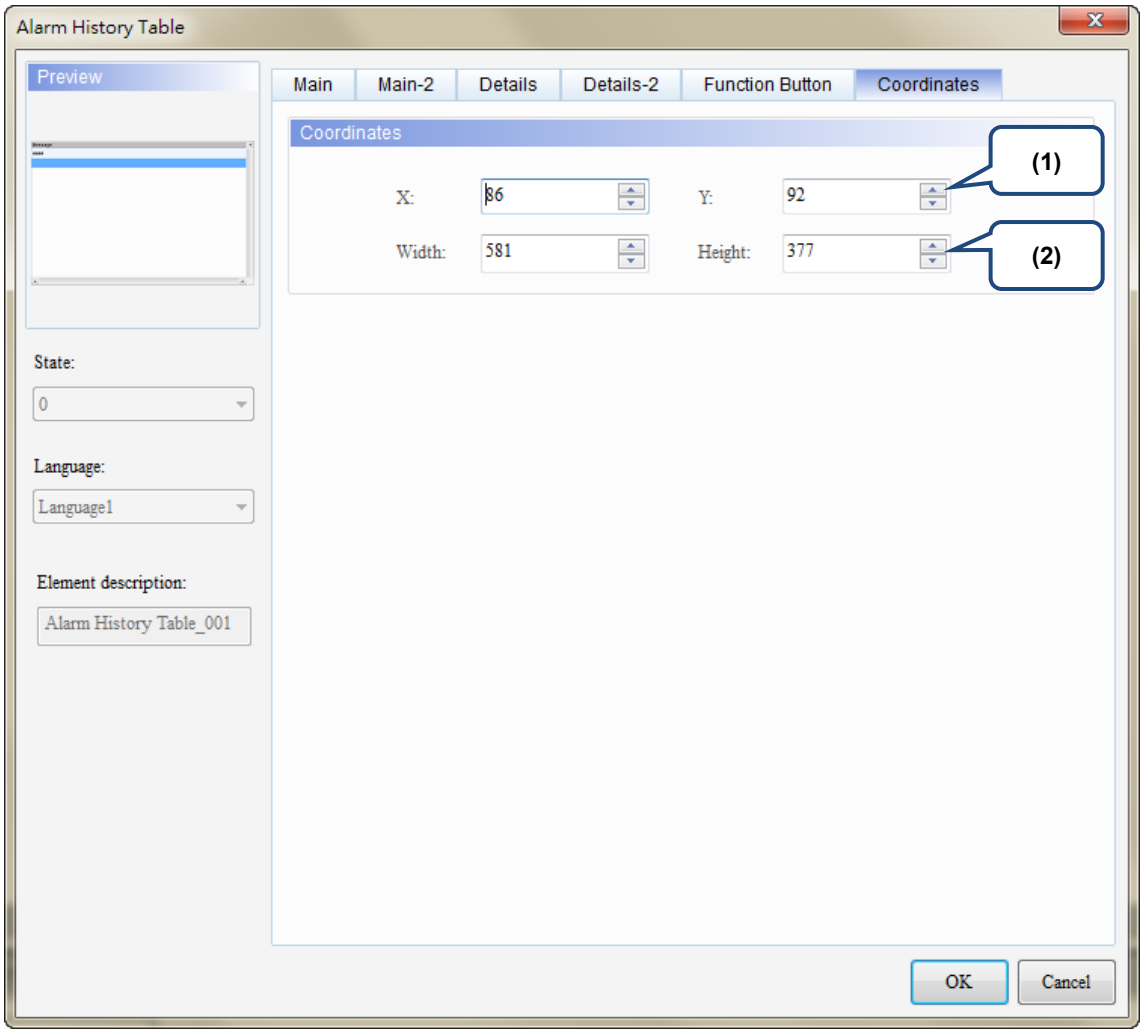


Figure 12.1.7 [Coordinates] property page for the Alarm History Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

12.2 Active Alarm List

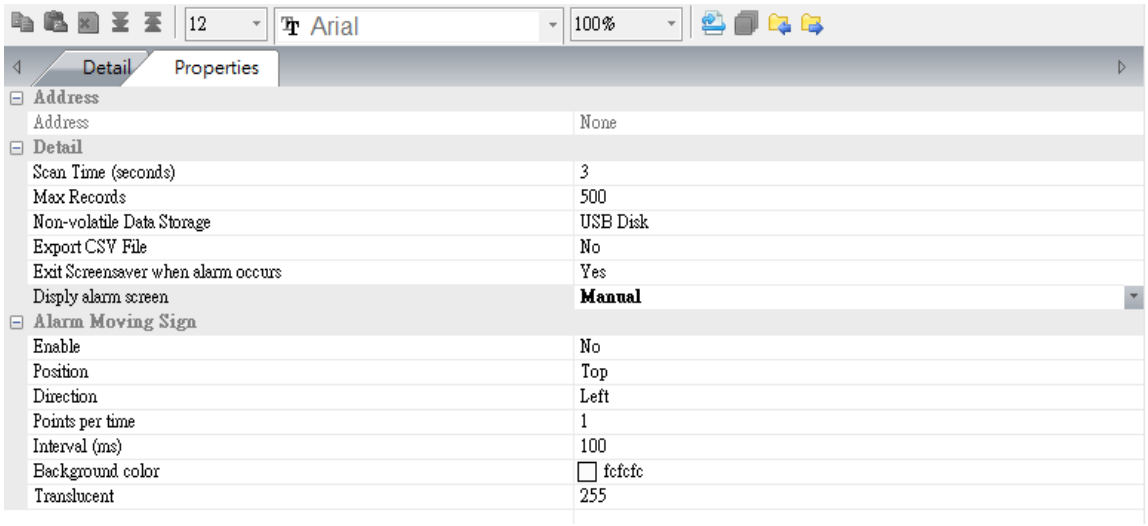
The Active Alarm List element displays the information of the current alarms.

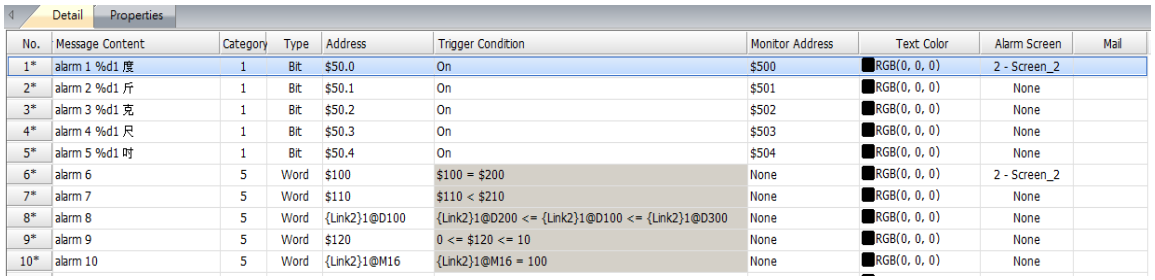
Please refer to Table 12.2.1 for the Active Alarm List example.

Table 12.2.1 [Active Alarm List] example

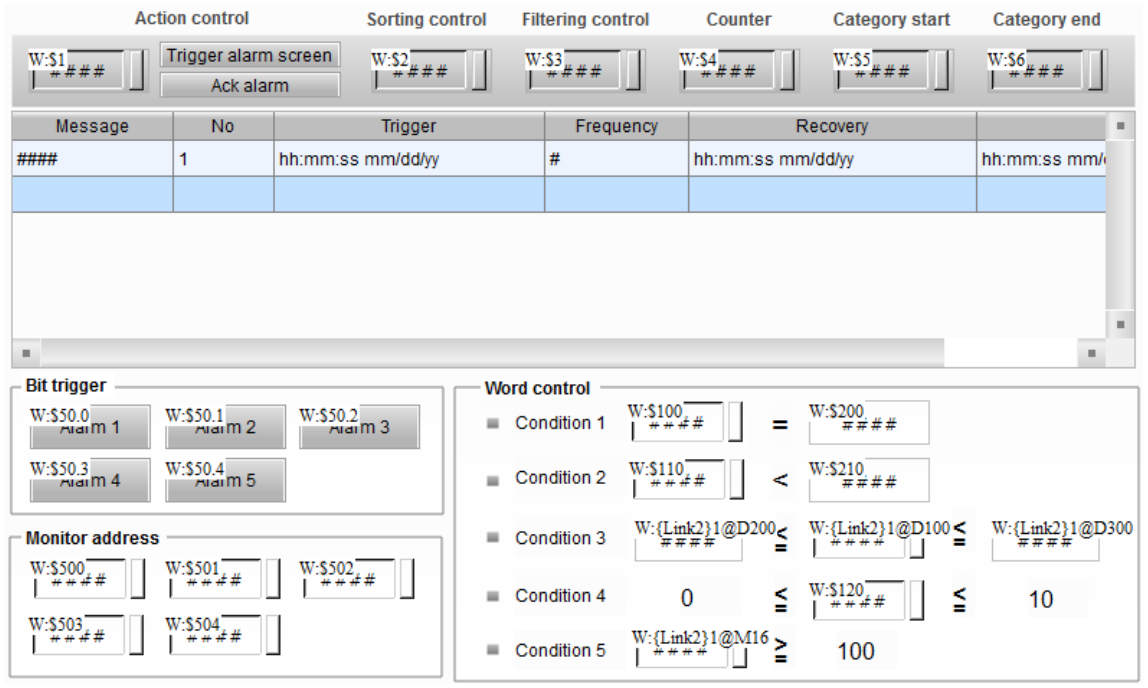
Active Alarm List

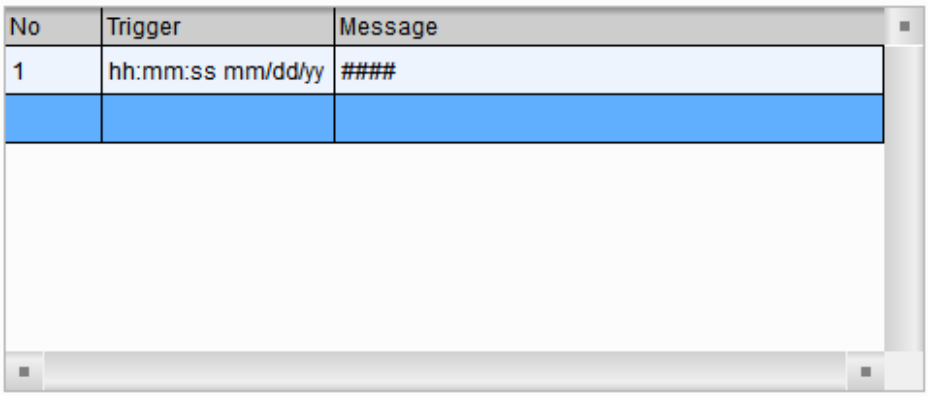
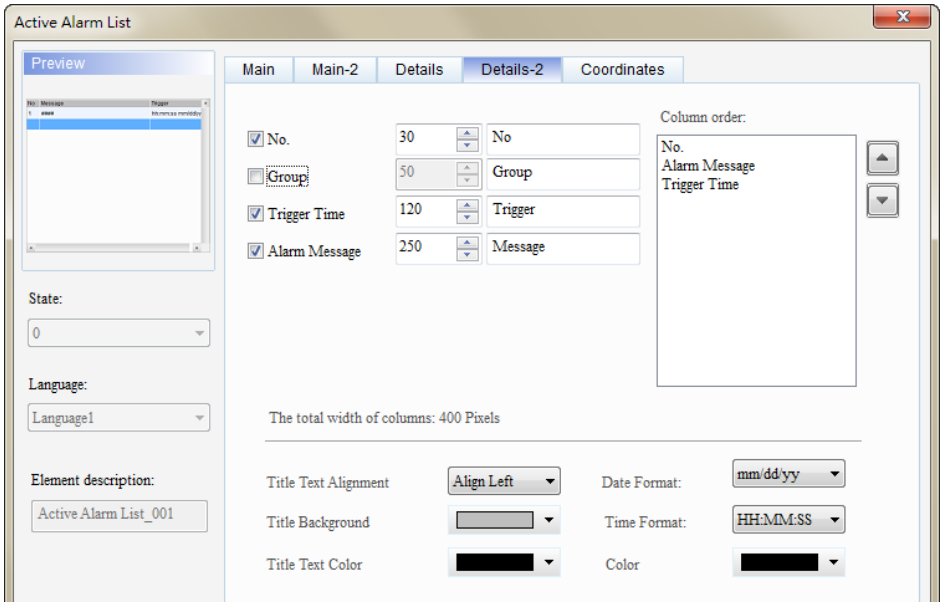
This example uses the alarm parameters in Table 12.1 [Alarm Settings] example.

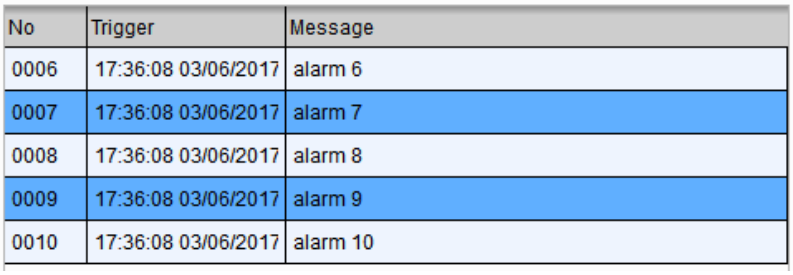




No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1*	alarm 1 %d1 度	1	Bit	$50.0	On	$500	RGB(0, 0, 0)	2 - Screen_2	
2*	alarm 2 %d1 斤	1	Bit	$50.1	On	$501	RGB(0, 0, 0)	None	
3*	alarm 3 %d1 克	1	Bit	$50.2	On	$502	RGB(0, 0, 0)	None	
4*	alarm 4 %d1 尺	1	Bit	$50.3	On	$503	RGB(0, 0, 0)	None	
5*	alarm 5 %d1 吋	1	Bit	$50.4	On	$504	RGB(0, 0, 0)	None	
6*	alarm 6	5	Word	$100	$100 = $200	None	RGB(0, 0, 0)	2 - Screen_2	
7*	alarm 7	5	Word	$110	$110 < $210	None	RGB(0, 0, 0)	None	
8*	alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300	None	RGB(0, 0, 0)	None	
9*	alarm 9	5	Word	$120	0 <= $120 <= 10	None	RGB(0, 0, 0)	None	
10*	alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 = 100	None	RGB(0, 0, 0)	None	



Active Alarm List	
Add Active Alarm List element	Please refer to the following steps: 1. Create Active Alarm List element.  2. Check [No.] and [Trigger Time]. [Alarm Message] is checked by default. Then, the Active Alarm List will display the number of the alarm, the time the alarm is triggered, and the alarm message. 

<table>
<tr><th colspan="3">Active Alarm List</th></tr>
<tr><td>Execution results</td><td colspan="2">After creating the Active Alarm List element, please compile and download the element to the HMI. When the conditions are met for Alarms 6 - 10, the Active Alarm List shows the current alarm time and date, alarm number, and alarm message. No items are displayed on the Active Alarm List when the alarms are cleared.</td></tr>
<tr><td></td><td>Alarm ON</td><td> 
</td></tr>
<tr><td></td><td>Alarm OFF</td><td>
</td></tr>
</table>

PLC1

The following figure shows the property setting screen when you double-click the Active Alarm List.

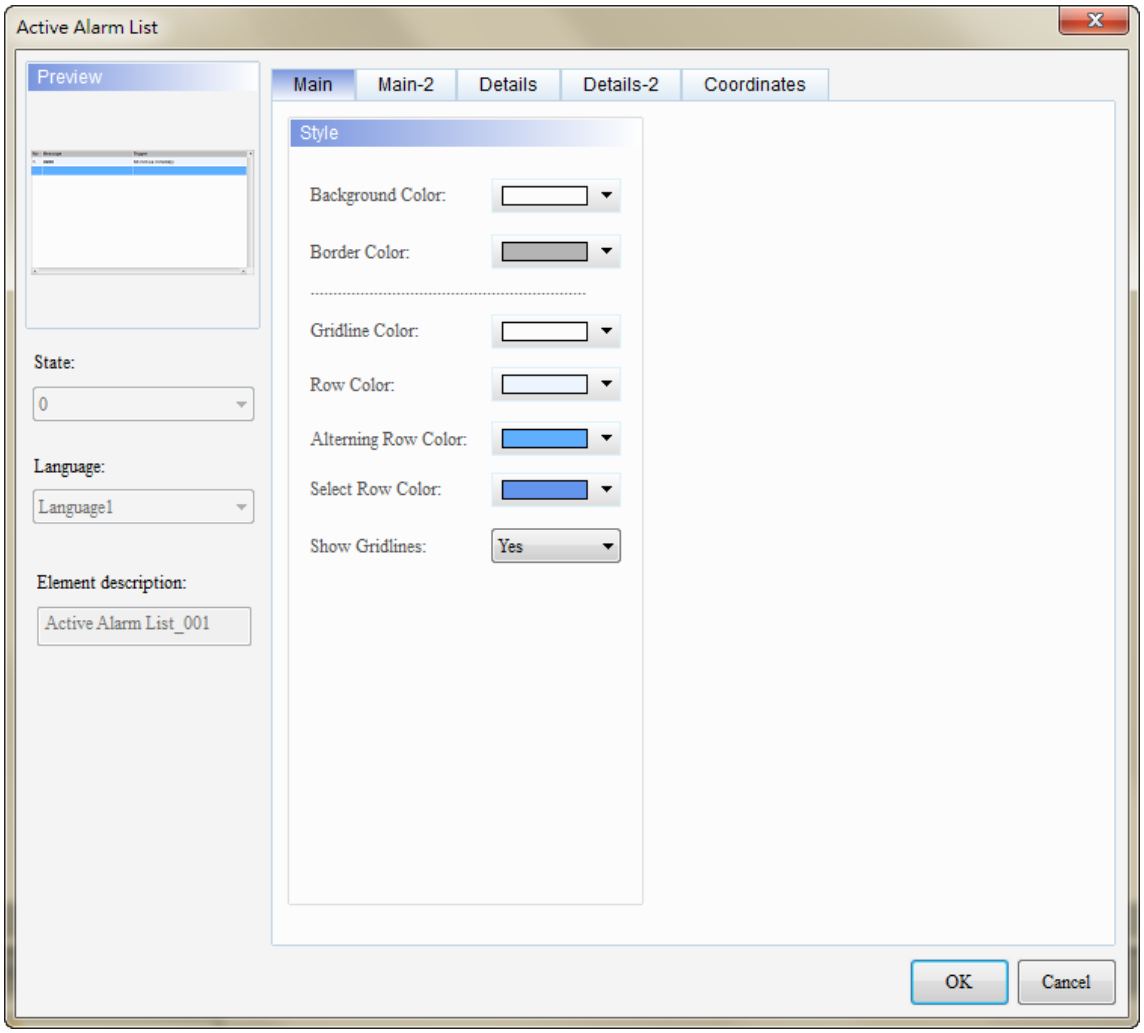


Figure 12.2.1 Properties of the [Active Alarm List]

Table 12.2.2 Function page for the [Active Alarm List]

Active Alarm List	
Function page	**Description**
Preview	Active Alarm List elements do not support multiple status values and multi-language data display.
Main	Set the [Background Color], [Border Color], [Gridline Color], [Row Color], [Alternating Row Color], [Select Row Color], and [Show Gridlines] of the elements.
Main-2	Set the [Transparent], [Animation], and [Anti-aliasing].
Details	Set the [Filter control address], [Alarm group start addr.], and [Alarm group end addr.]. (Please refer to the Alarm History Table example.)
Details-2	Set the displaying alarm columns, width, description, and the order of the columns. Set the [Title Text Alignment], [Title Background] color, [Title Text Color], and format / color of the date / time.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

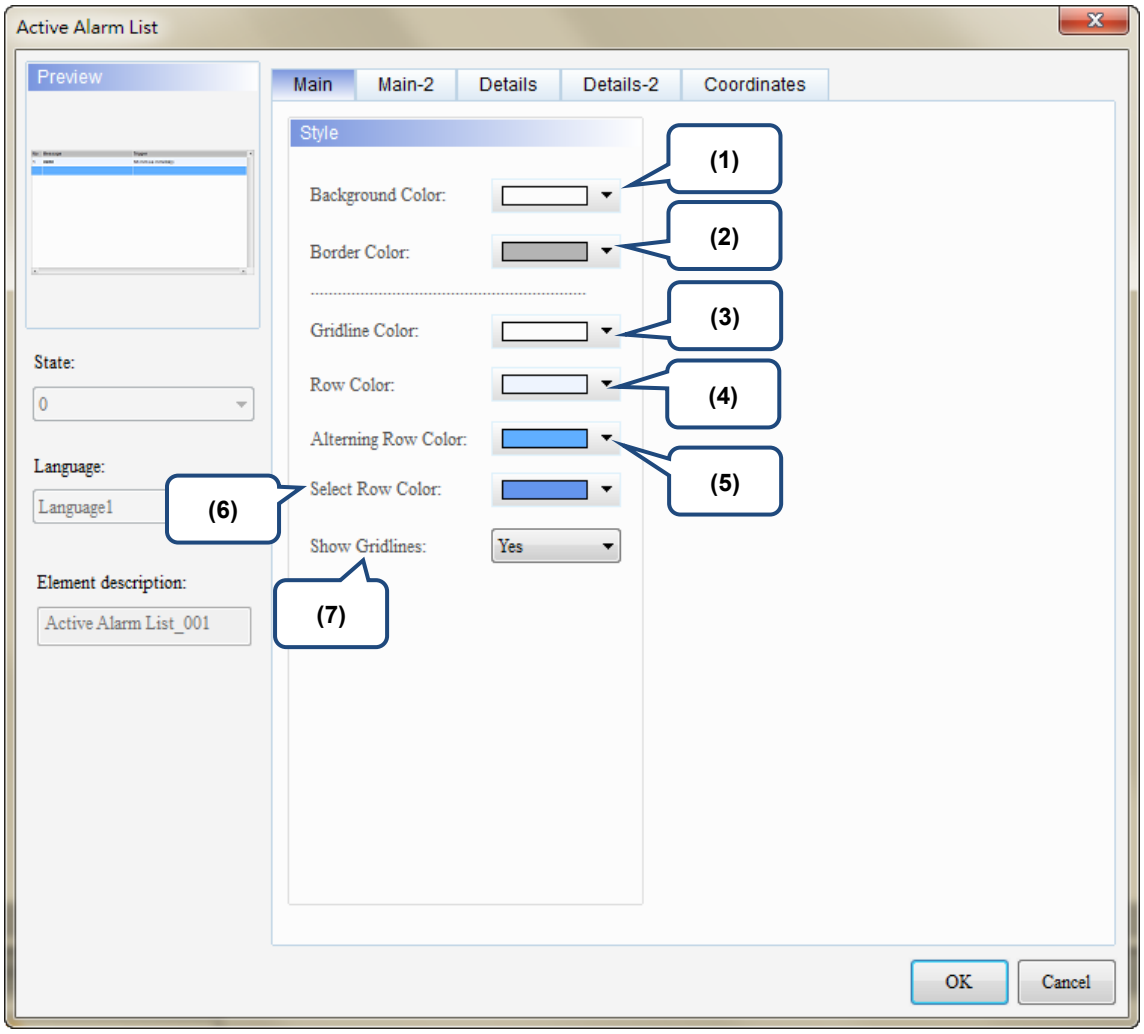
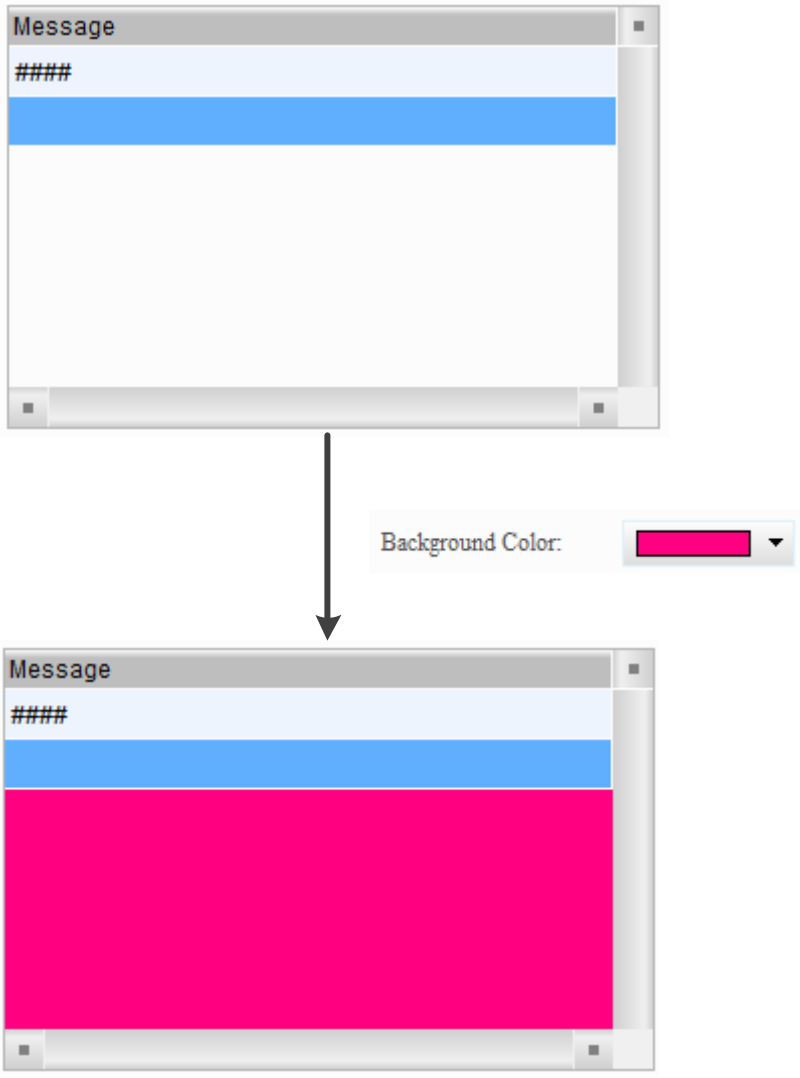
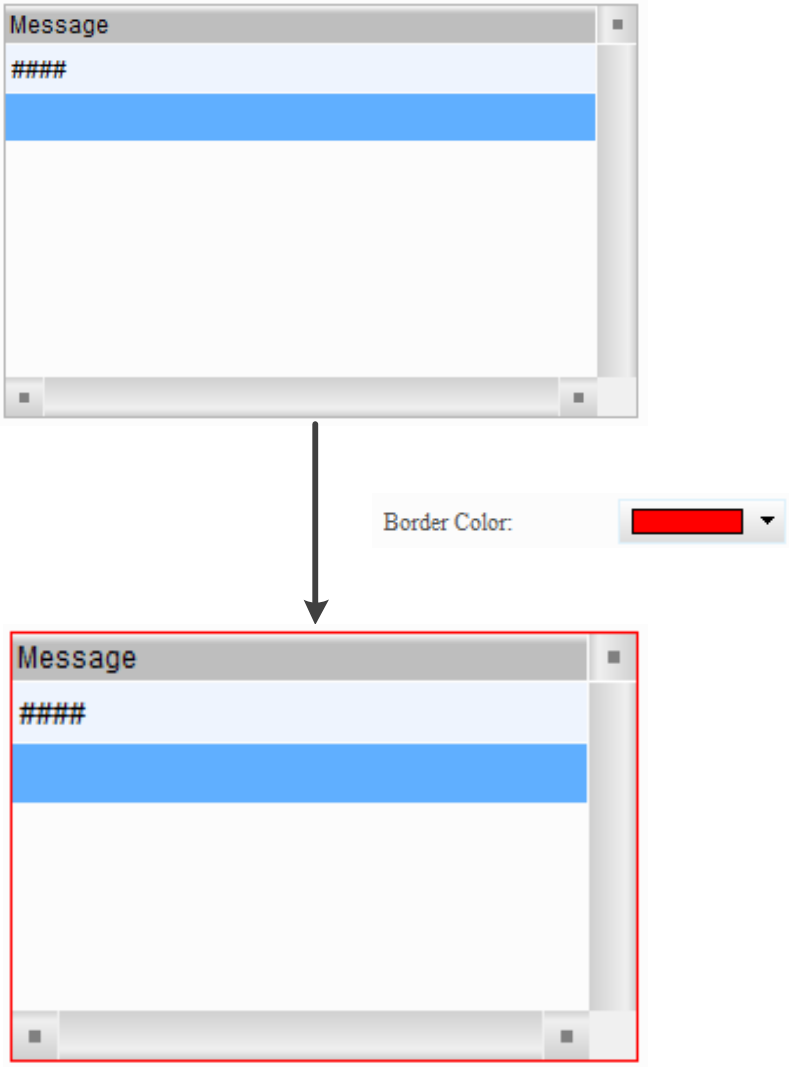
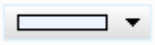
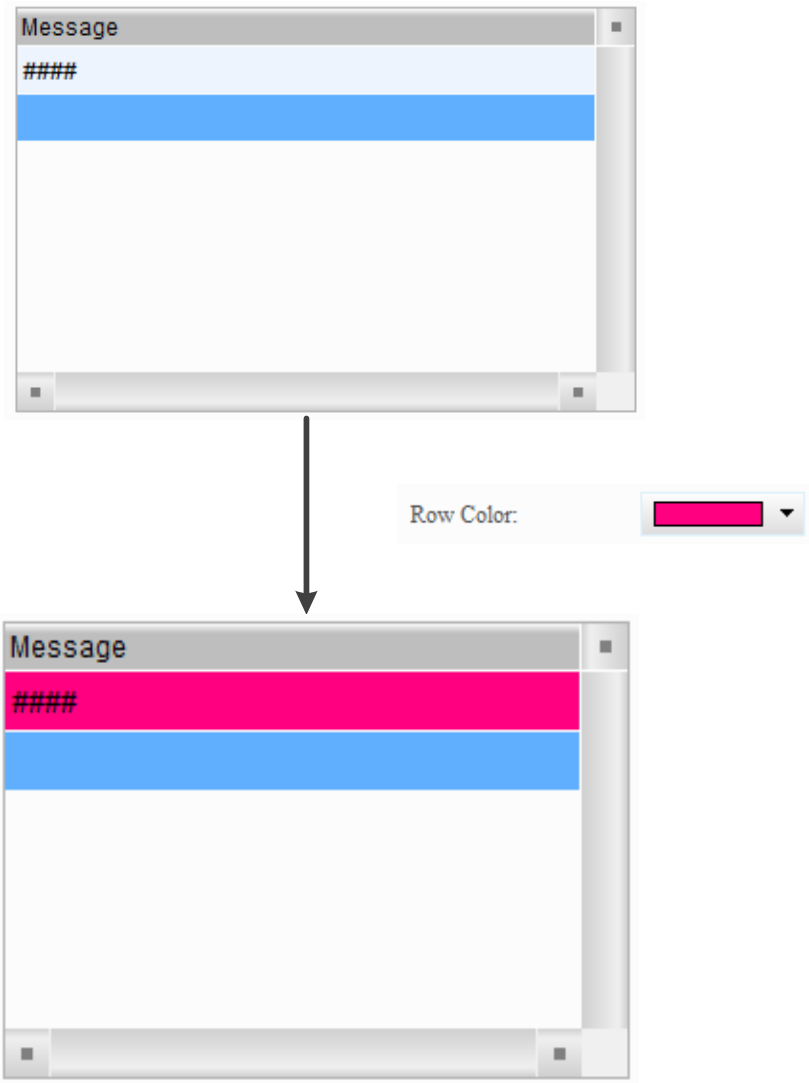


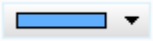
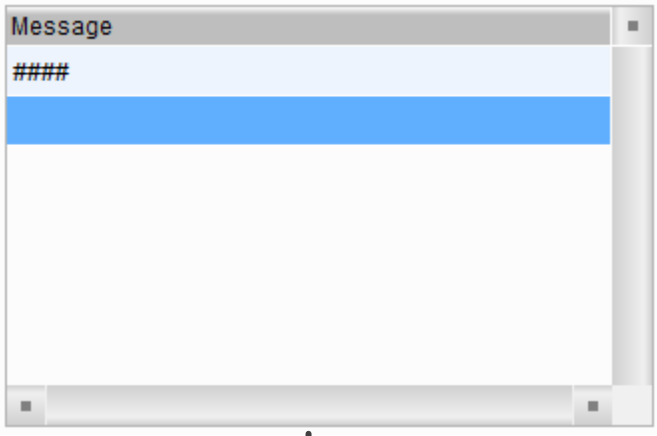
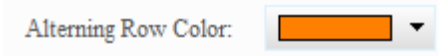
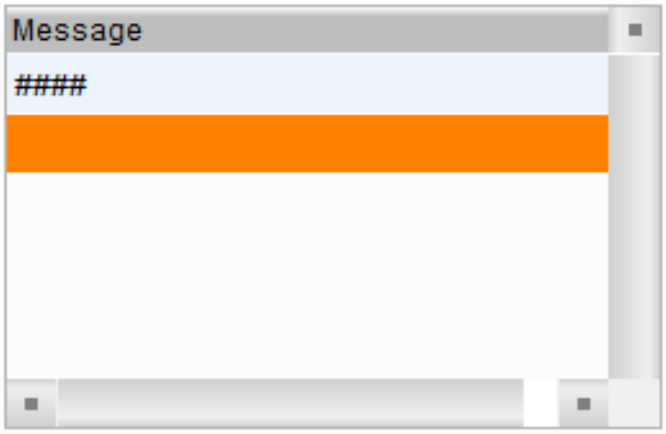
Figure 12.2.2 [Main] property page for the Active Alarm List element

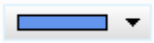
No.	Property	Function description
(1)	Background Color	Set the background color of the element. The default is white. 

No.	Property	Function description
(2)	Border Color	Set the border color of the element. The default is gray. 

No.	Property	Function description
(3)	Gridline Color	■ The [Gridline Color] setting is valid only when you select **Yes** for [Show Gridlines]. ■ Set the gridline color of the element. The default is white.

No.	Property	Function description
(4)	Row Color	Set the color for each row of the alarm. The default is  . 

No.	Property	Function description
(5)	Alternating Row Color	Set the color for the alternating row of the alarm. The default is  .   

No.	Property	Function description
(6)	Select Row Color	■ The row color when you select an alarm history data. ■ Set the color of the selected row. The default is  .
(7)	Show Gridlines	The default is **Yes**. When you select **No**, the [Gridline Color] setting is invalid.

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■ Main-2

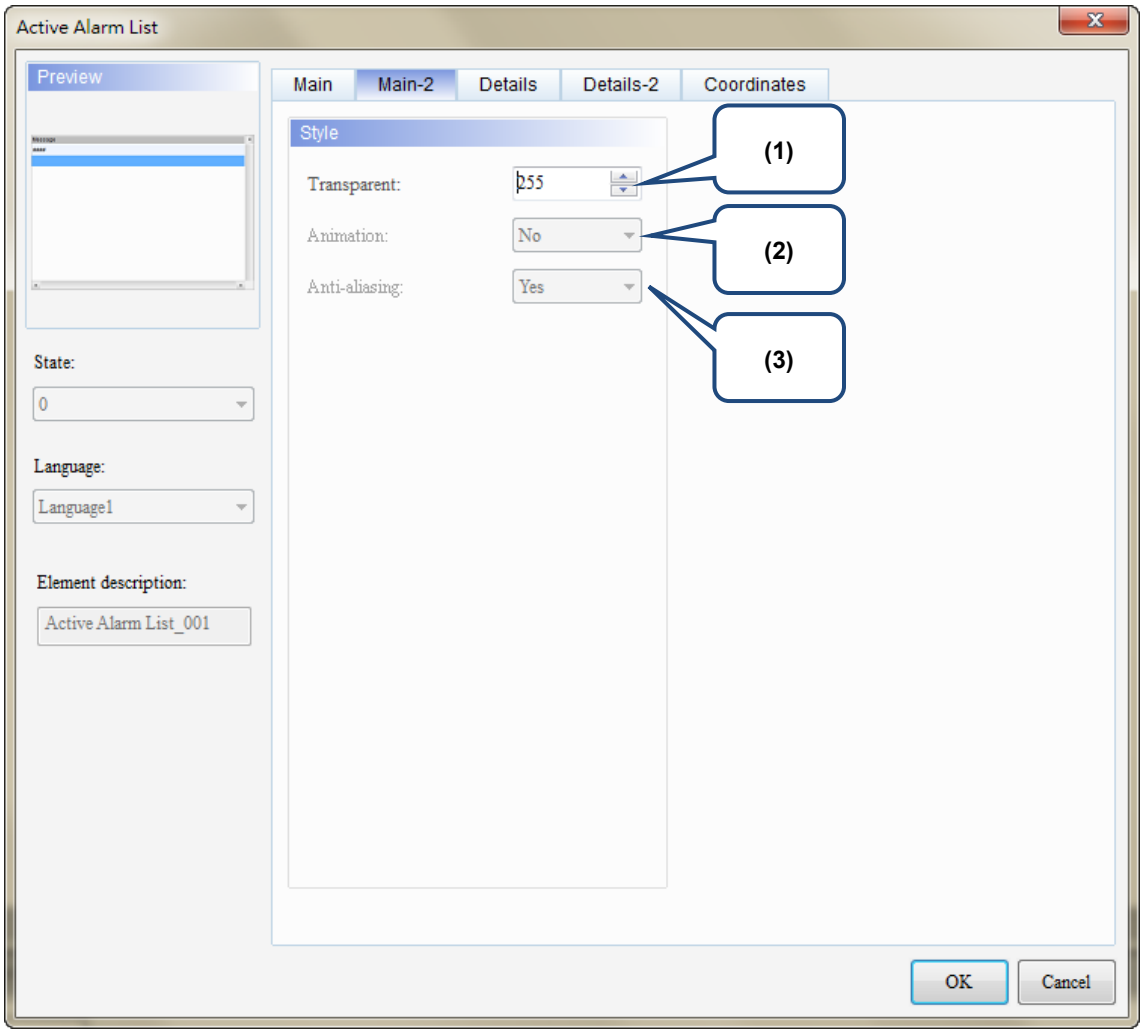


Figure 12.2.3 [Main-2] property page for the Active Alarm List element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Animation	The [Animation] function is not available for this element.
(3)	Anti-aliasing	The [Anti-aliasing] function is not available for this element.

■ Details-2

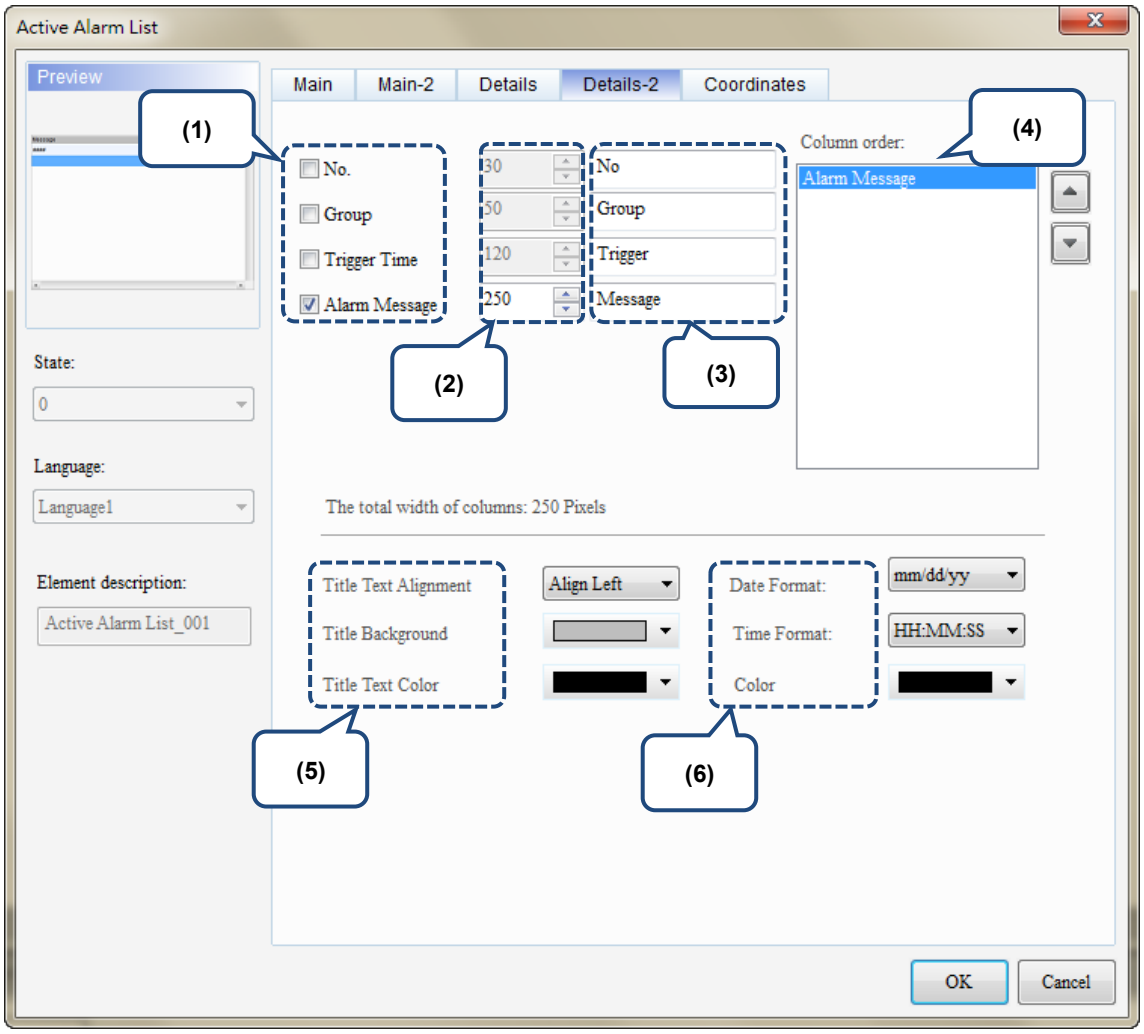
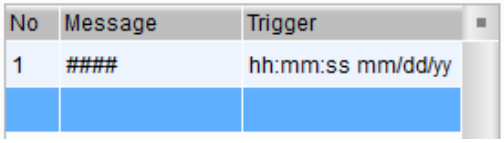
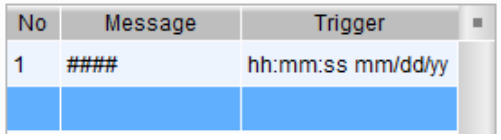
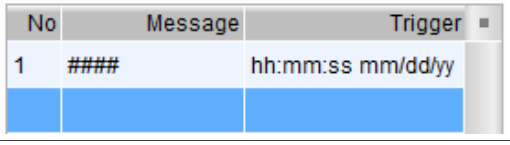
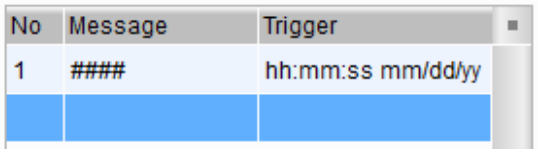
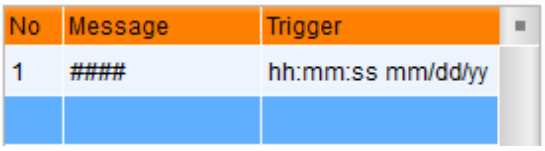
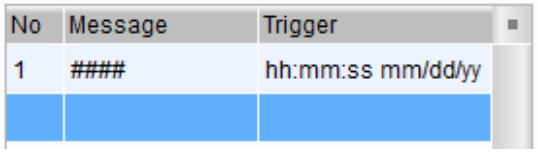
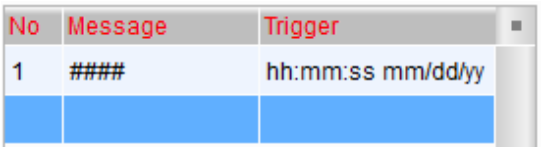
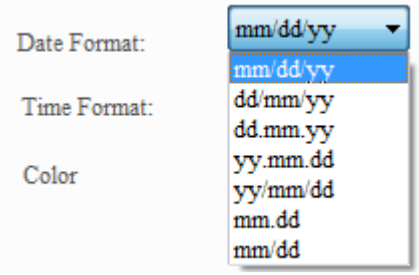
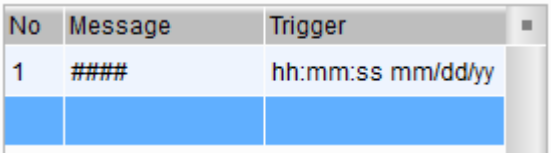
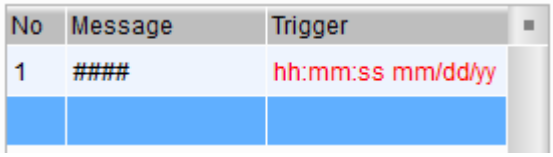


Figure 12.2.4 [Details-2] property page for the Active Alarm List element

No.	Property	Function description	
(1)	Column display	Check the columns you want to display in the element.	
(2)	Column width	You can adjust the width for each column.	
(3)	Column title	You can define the titles for each column.	
(4)	Column order	After checking the columns you want to display, you can use the ▲ and ▼ buttons to adjust the column displaying order.	
(5)	Title	Text Alignment	Set the column title to align left, center, or right.

Align Left	
Center	
Align Right	

<table>
<tr><th>No.</th><th>Property</th><th colspan="2">Function description</th></tr>
<tr><td rowspan="4">(5)</td><td rowspan="4">Title</td><td rowspan="2">Back-ground</td><td>Set the background color of the column title.
Default
 
After change
  </td></tr>
<tr><td rowspan="2">Set the text color of the column title.
Default
 
After change
  </td></tr>
<tr><td>Text Color</td></tr>
<tr><td rowspan="3">(6)</td><td rowspan="3">Date and time</td><td>Date Format</td><td>Select the display format for the date from the following options.
  </td></tr>
<tr><td>Time Format</td><td>Select the display format for the time from the following options.
 </td></tr>
<tr><td>Color</td><td>Set the displaying color of the date and time.
Default
 
After change
  </td></tr>
</table>

■ Coordinates

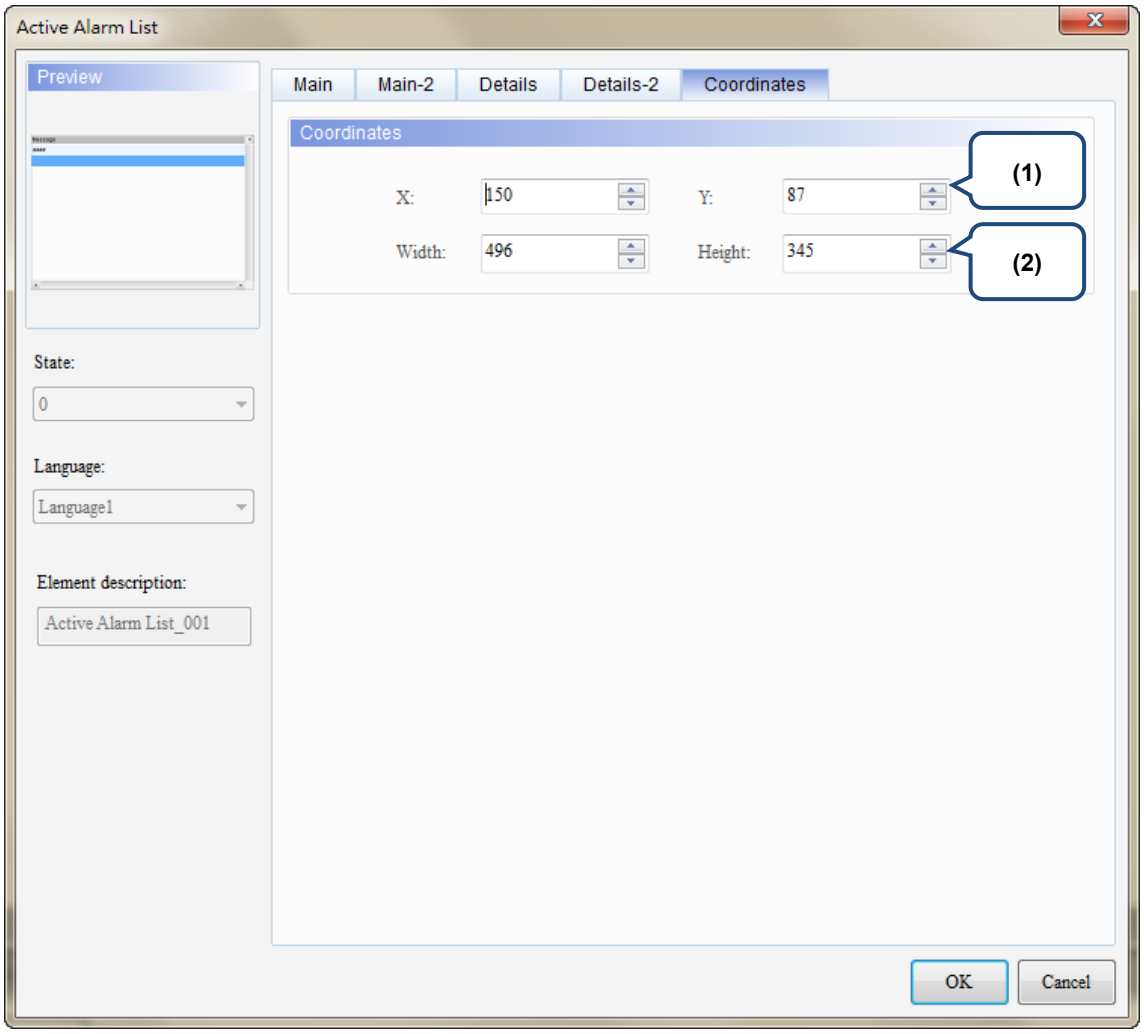


Figure 12.2.5 [Coordinates] property page for the Active Alarm List element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

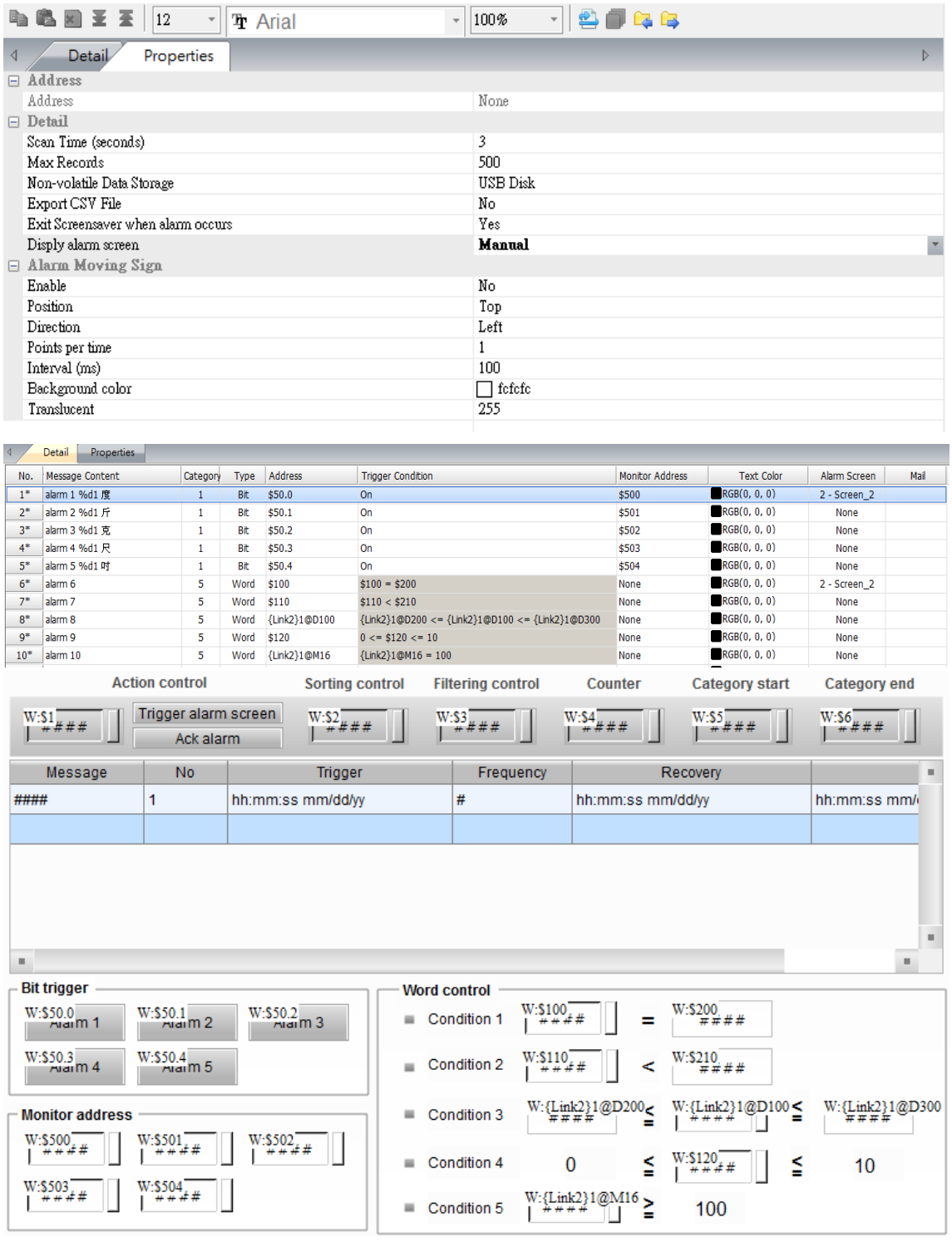
12.3 Alarm Frequency Table

The Alarm Frequency Table element records and displays the occurrence times of each alarm.

Please refer to Table 12.3.1 for the Alarm Frequency Table example.

Table 12.3.1 [Alarm Frequency Table] example

Alarm Frequency Table
This example uses the alarm parameters in Table 12.1 [Alarm Settings] example.

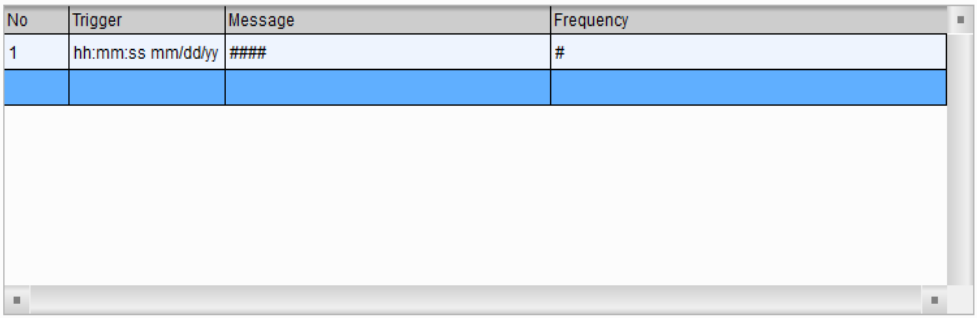


Alarm Frequency Table

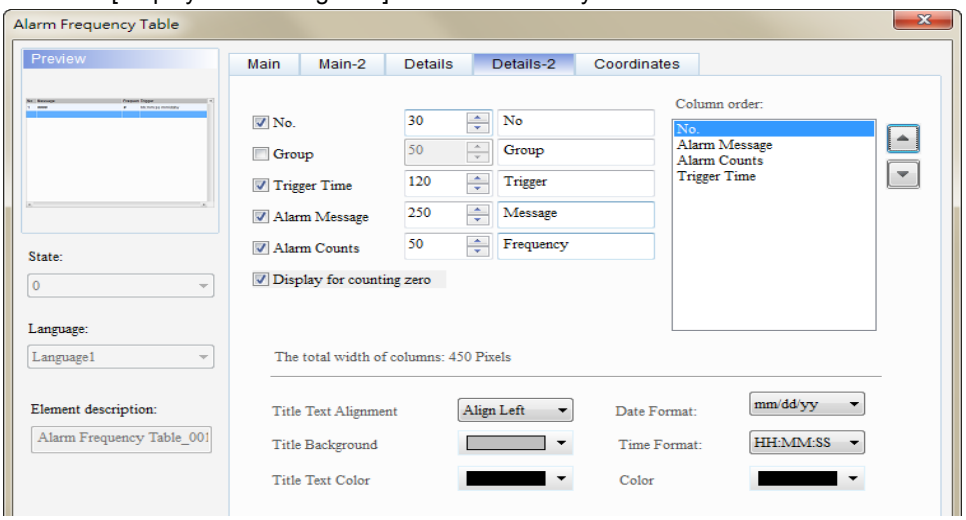
Add Alarm Frequency Table element

Please refer to the following steps:

1. Create Alarm Frequency Table element.



2. Check [No.] and [Trigger Time]. [Alarm Message] and [Alarm Counts] are checked by default. Then, the Alarm Frequency Table will display the number of the alarm, the time the alarm is triggered, alarm message, and will also record the occurrence times of each alarm. [Display for counting zero] is also checked by default.



Execution results

- After creating the Alarm Frequency Table element, please compile and download the element to the HMI. When the conditions are met for Alarms 6 - 10, the Alarm Frequency Table shows the current alarm time and date, alarm number, alarm message, and alarm counts. When [Display for counting zero] is checked, the Alarm Frequency Table displays 0 in the Frequency column when Alarms 1 - 5 are not triggered.
- After the alarm is cleared, the recorded alarm counts in the Alarm Frequency Table will not be cleared.

Alarm ON

No	Message	Frequency	Trigger
000	Alarm 1 30 degree(s)	1	16:19:09 09/20/2017
000	Alarm 2 10 kilogram(s)	1	16:19:12 09/20/2017
000	Alarm 3 %d1 gram(s)	0	00:00:00 00/00/0000
000	Alarm 4 %d1 meter(s)	0	00:00:00 00/00/0000
000	Alarm 5 %d1 inch(es)	0	00:00:00 00/00/0000

Alarm OFF

No	Message	Frequency	Trigger
000	Alarm 1 30 degree(s)	1	16:19:09 09/20/2017
000	Alarm 2 10 kilogram(s)	1	16:19:12 09/20/2017
000	Alarm 3 %d1 gram(s)	0	00:00:00 00/00/0000
000	Alarm 4 %d1 meter(s)	0	00:00:00 00/00/0000
000	Alarm 5 %d1 inch(es)	0	00:00:00 00/00/0000

The following figure shows the property setting screen when you double-click the Alarm Frequency Table.

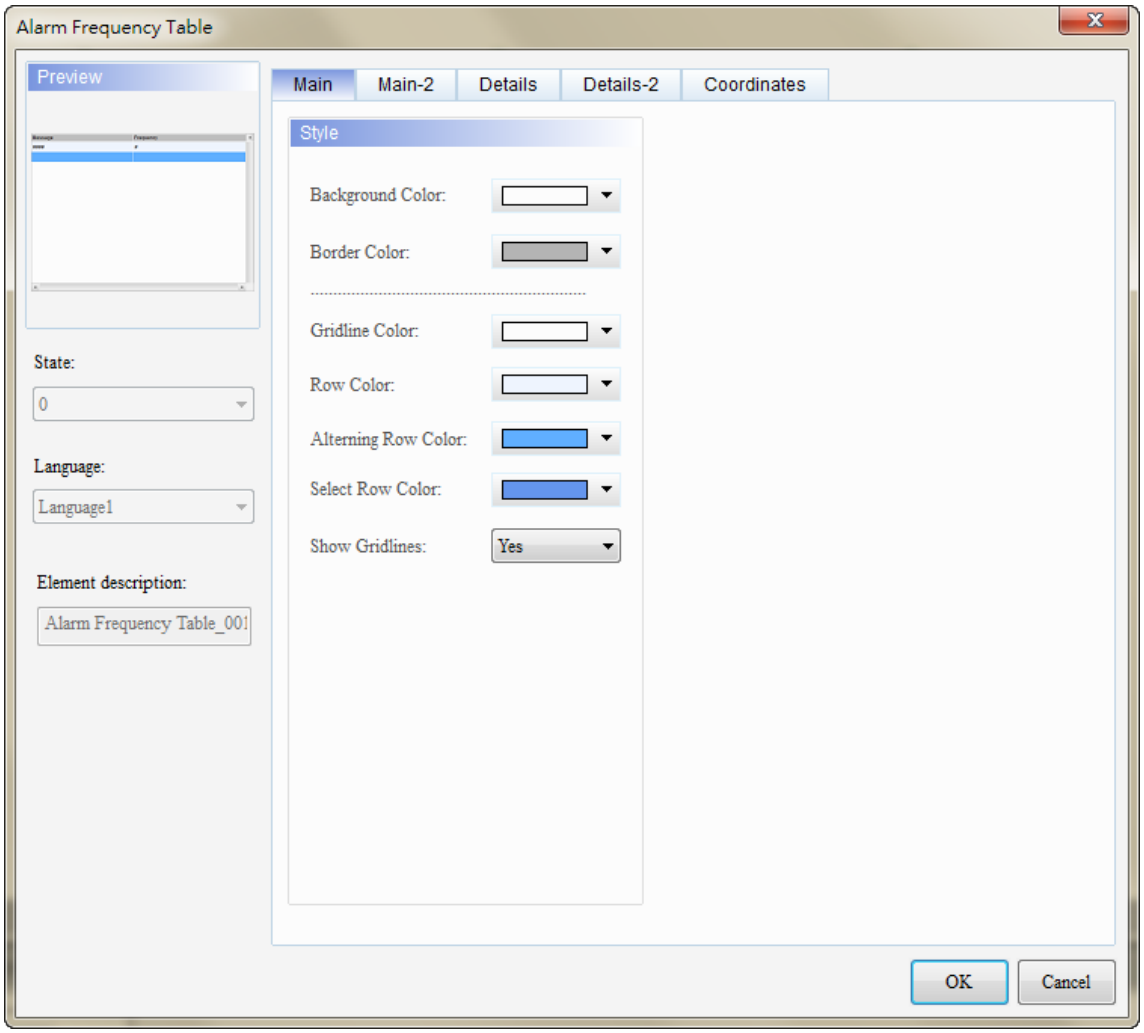


Figure 12.3.1 Properties of the [Alarm Frequency Table]

Table 12.3.2 Function page for the [Alarm Frequency Table]

Alarm Frequency Table	
Function page	**Description**
Preview	Alarm Frequency Table elements do not support multiple status values and multi-language data display.
Main	Set the [Background Color], [Border Color], [Gridline Color], [Row Color], [Alternating Row Color], [Select Row Color], and [Show Gridlines] of the elements.
Main-2	Set the [Transparent], [Animation], and [Anti-aliasing].
Details	Set the [Filter control address], [Alarm group start addr.], and [Alarm group end addr.]. (Please refer to the Alarm History Table example.)
Details-2	Set the displaying alarm columns, width, description, and the order of the columns. Set the [Title Text Alignment], [Title Background] color, [Title Text Color], and format / color of the date / time.
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

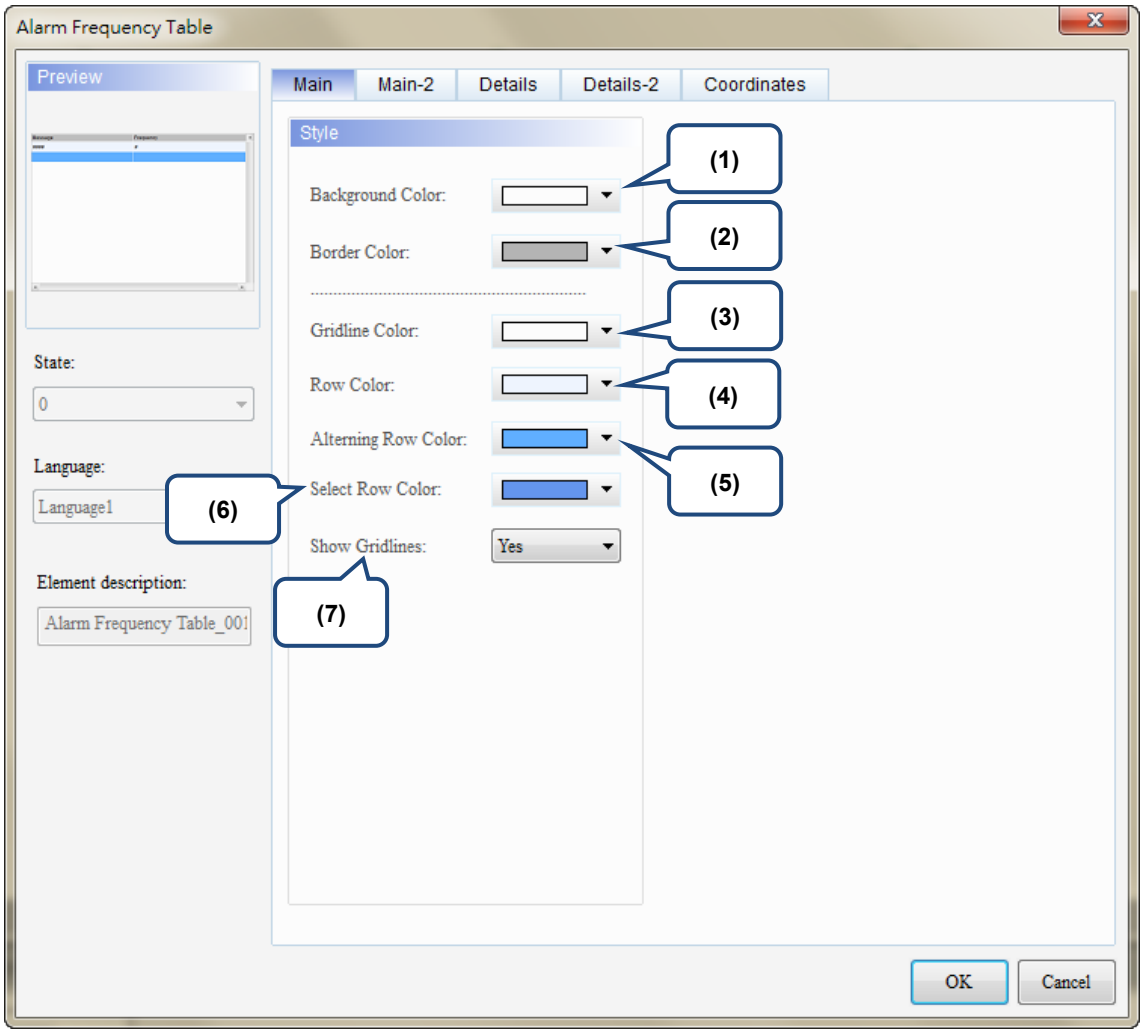
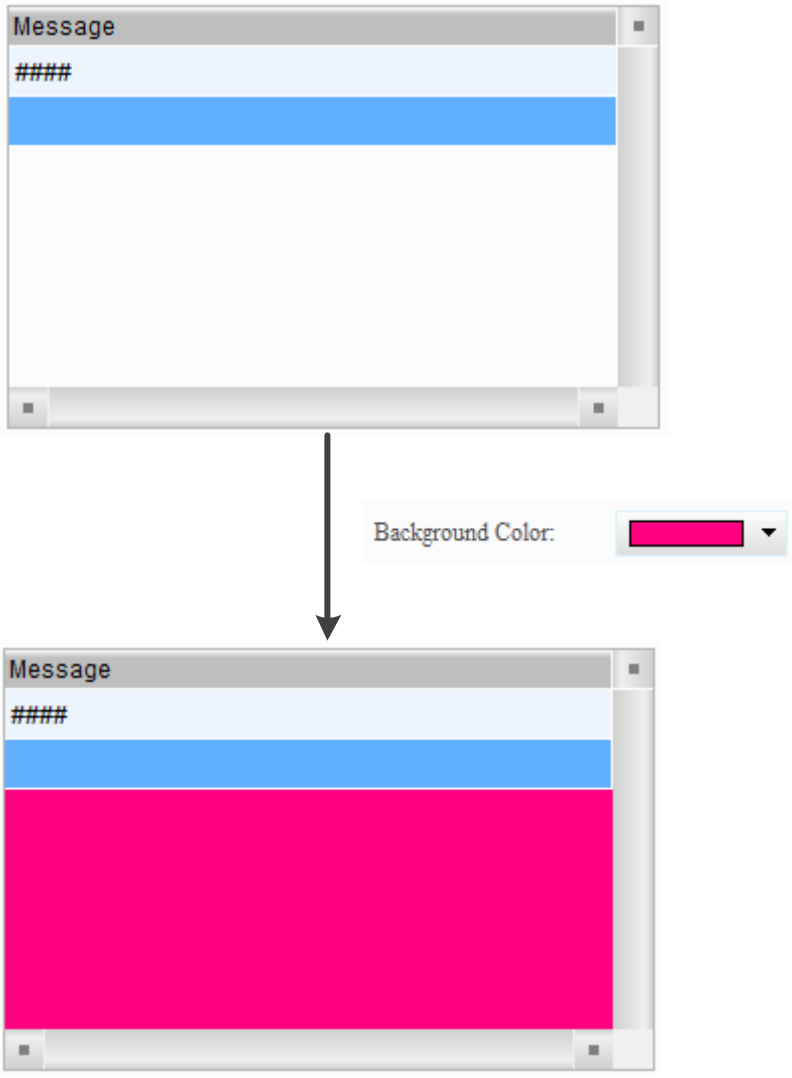
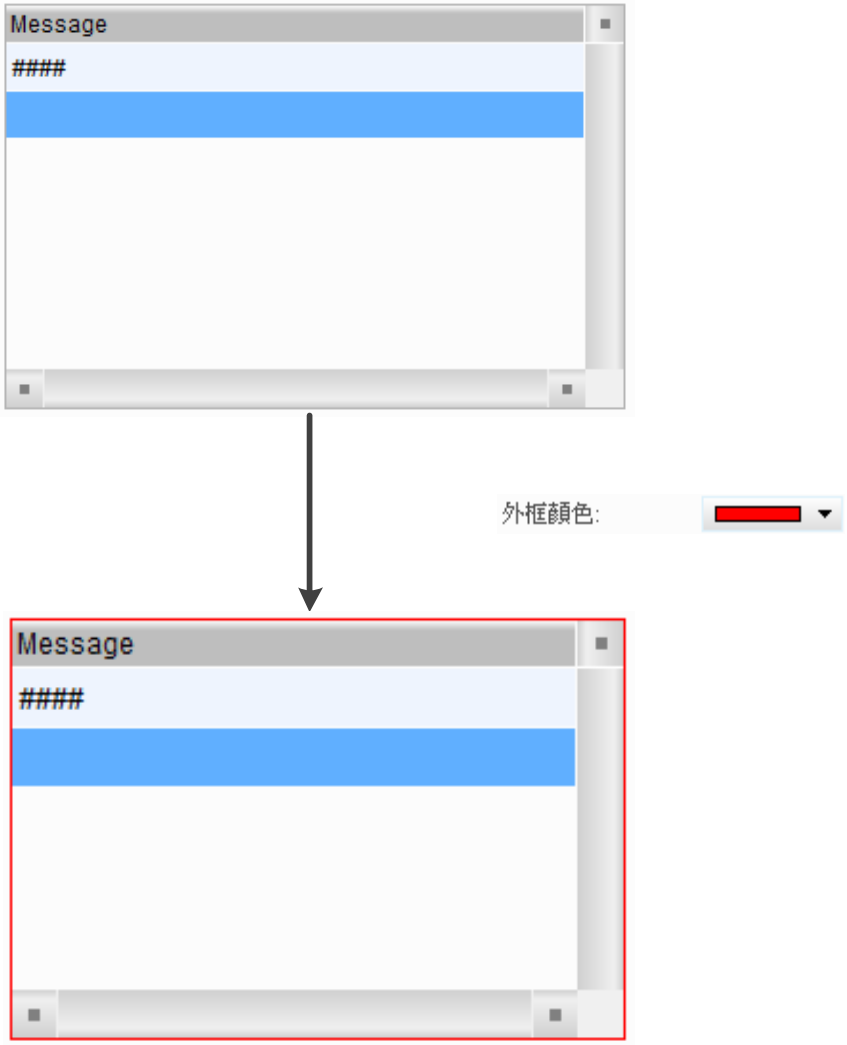
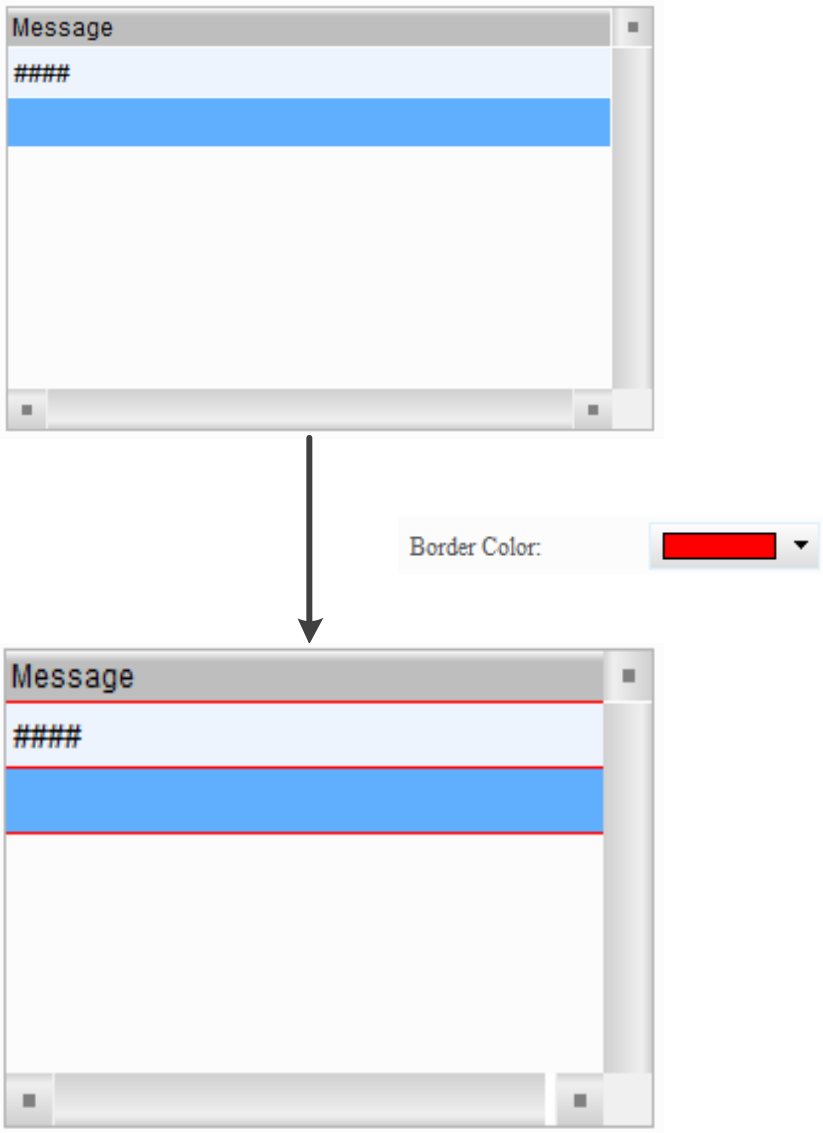
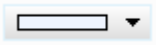
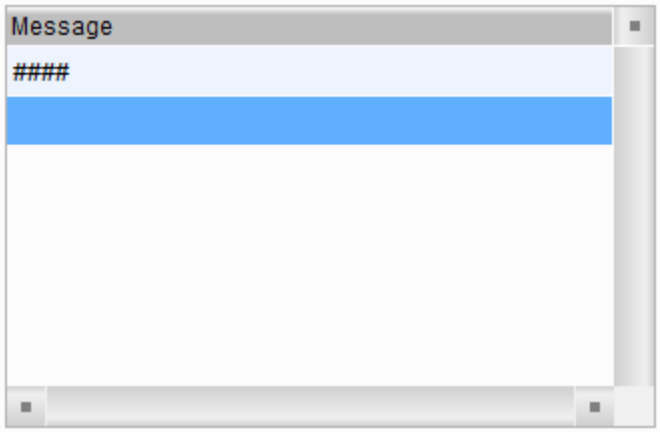
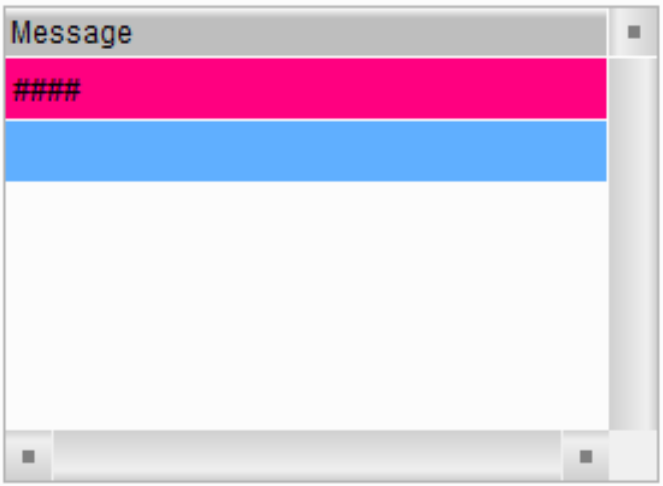


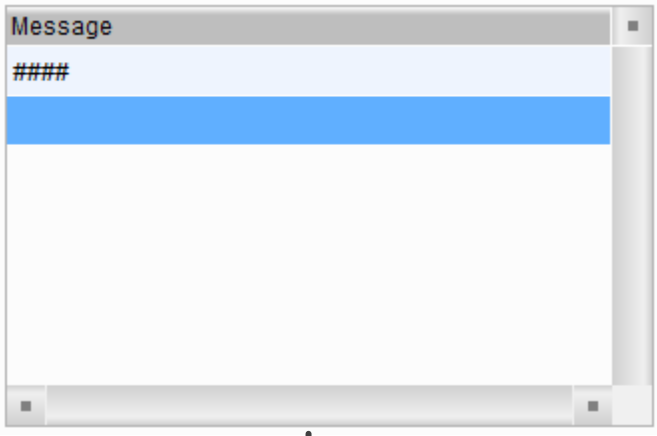
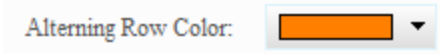
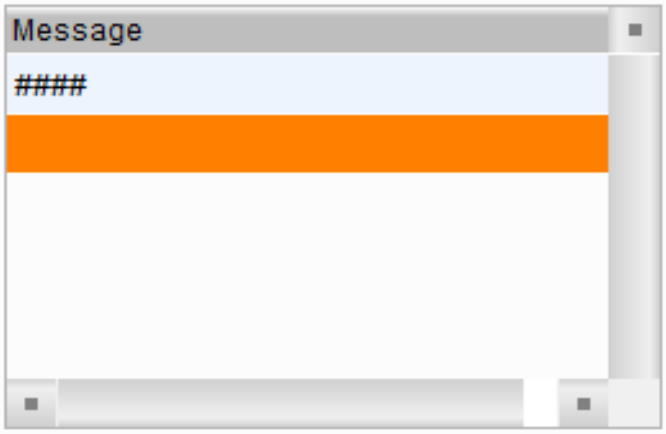
Figure 12.3.2 [Main] property page for the Alarm Frequency Table element

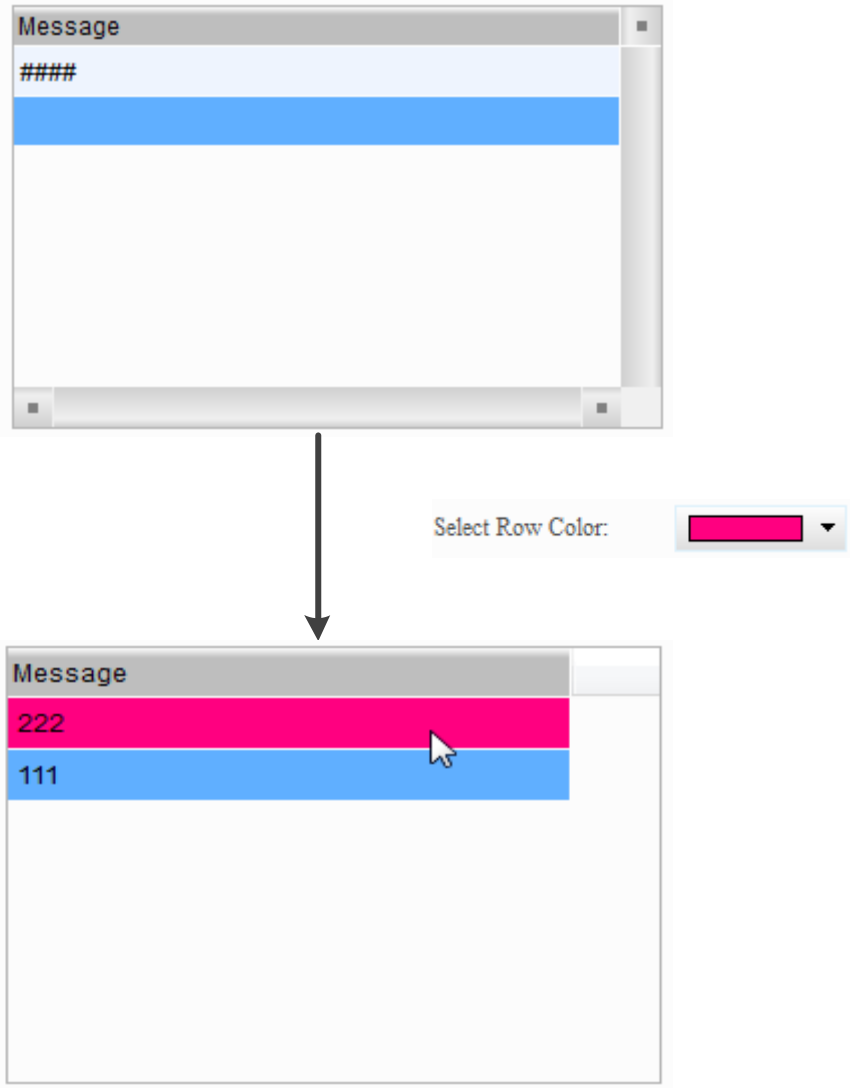
No.	Property	Function description
(1)	Background Color	Set the background color of the element. The default is white. 

No.	Property	Function description
(2)	Border Color	Set the border color of the element. The default is gray. 

No.	Property	Function description
(3)	Gridline Color	■ The [Gridline Color] setting is valid only when you select **Yes** for [Show Gridlines]. ■ Set the gridline color of the element. The default is white. 

No.	Property	Function description
(4)	Row Color	Set the color for each row of the alarm. The default is  .  

No.	Property	Function description
(5)	Alternating Row Color	Set the color for the alternating row of the alarm. The default is .   

No.	Property	Function description
(6)	Select Row Color	■ The row color when you select an alarm history data. ■ Set the color of the selected row. The default is . 
(7)	Show Gridlines	The default is **Yes**. When you select **No**, the [Gridline Color] setting is invalid.

■ Main-2

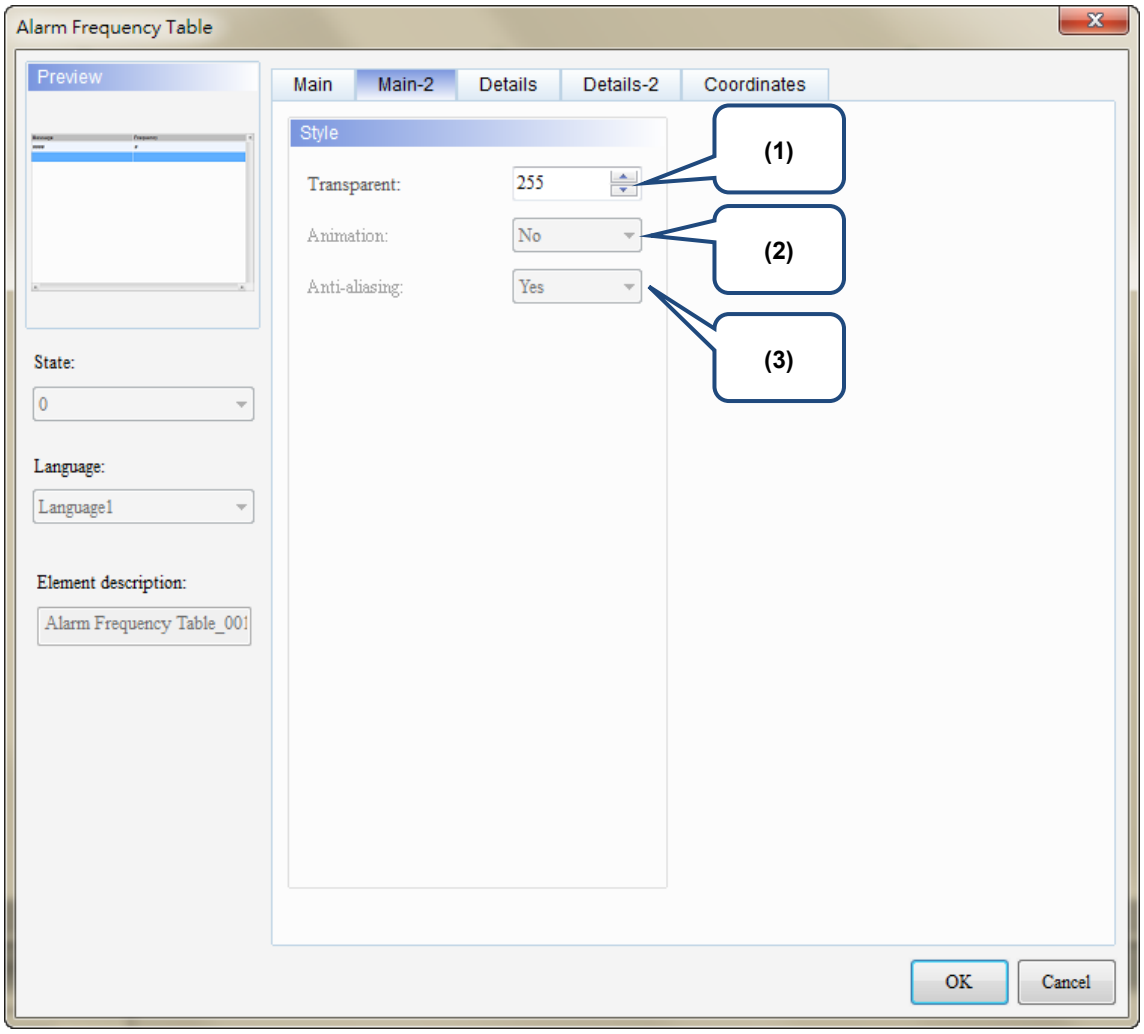


Figure 12.3.3 [Main-2] property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Animation	The [Animation] function is not available for this element.
(3)	Anti-aliasing	The [Anti-aliasing] function is not available for this element.

■ Details-2

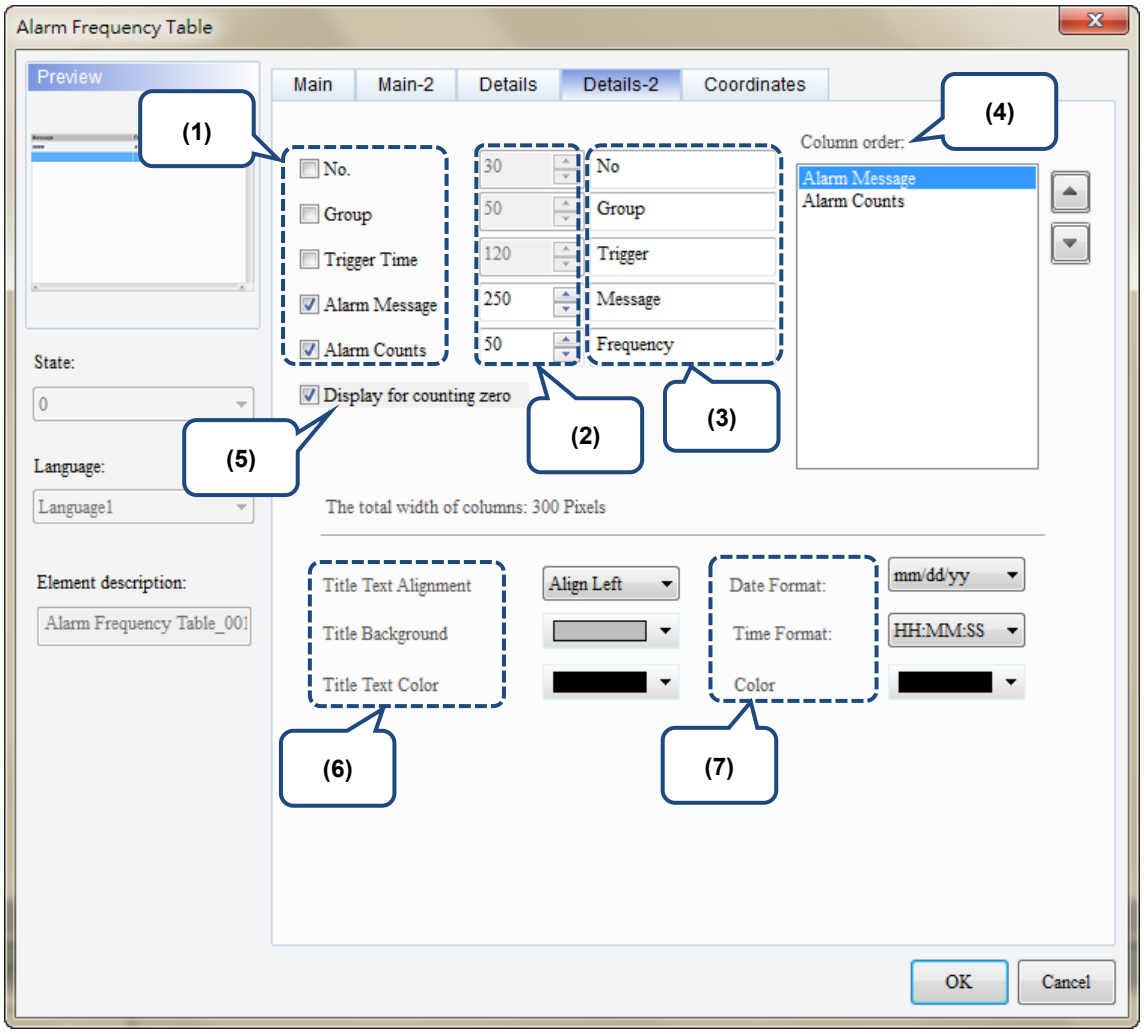
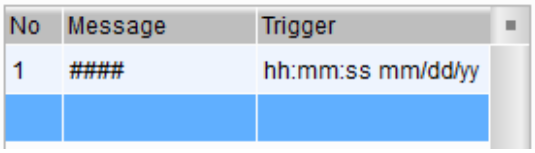
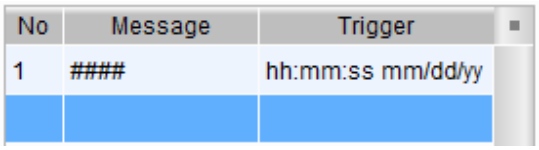
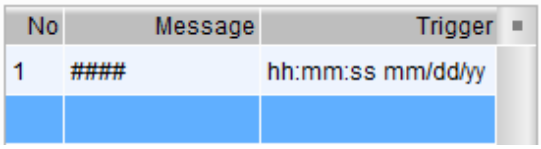
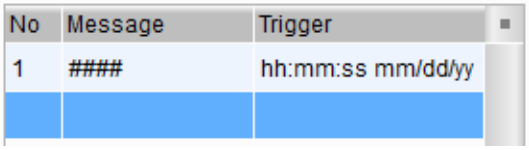
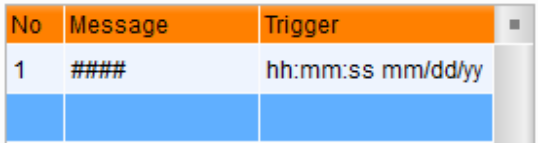
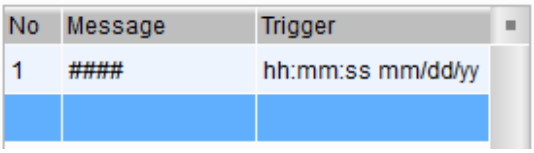
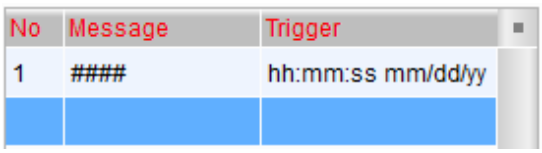
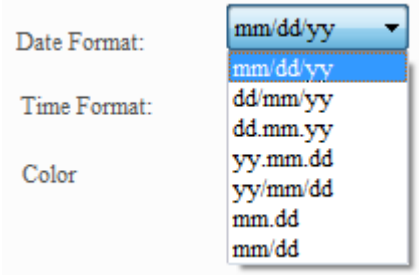
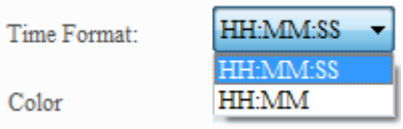
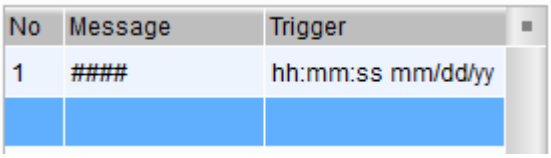
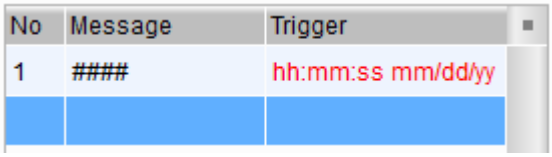


Figure 16.4.4 [Details-2] property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	Column display	Check the columns you want to display in the element.
(2)	Column width	You can adjust the width for each column.
(3)	Column title	You can define the titles for each column.
(4)	Column order	After checking the columns you want to display, you can use the ▲ and ▼ buttons to adjust the column displaying order.

<table>
<tr><th>No.</th><th>Property</th><th colspan="3">Function description</th></tr>
<tr><td rowspan="2">(5)</td><td rowspan="2">Display for counting zero</td><td colspan="3">If you check this option, 0 is displayed on the Alarm Frequency Table when no alarm is triggered; otherwise, the alarm message is not displayed when the occurrence time of the alarm is zero.</td></tr>
<tr><td colspan="3">
Check
<table>
<tr><th>No</th><th>Message</th><th>Frequency</th><th>Trigger</th></tr>
<tr><td>000</td><td>Alarm 1 30 degree(s)</td><td>1</td><td>16:19:09 09/20/2017</td></tr>
<tr><td>000</td><td>Alarm 2 10 kilogram(s)</td><td>1</td><td>16:19:12 09/20/2017</td></tr>
<tr><td>000</td><td>Alarm 3 %d1 gram(s)</td><td>0</td><td>00:00:00 00/00/0000</td></tr>
<tr><td>000</td><td>Alarm 4 %d1 meter(s)</td><td>0</td><td>00:00:00 00/00/0000</td></tr>
<tr><td>000</td><td>Alarm 5 %d1 inch(es)</td><td>0</td><td>00:00:00 00/00/0000</td></tr>
</table>
Uncheck
<table>
<tr><th>No</th><th>Message</th><th>Frequency</th><th>Trigger</th></tr>
<tr><td>000</td><td>Alarm 1 30 degree(s)</td><td>1</td><td>16:25:23 09/20/2017</td></tr>
<tr><td>000</td><td>Alarm 2 10 kilogram(s)</td><td>1</td><td>16:25:26 09/20/2017</td></tr>
<tr><td>000</td><td>Alarm 6</td><td>1</td><td>16:25:20 09/20/2017</td></tr>
<tr><td>000</td><td>Alarm 7</td><td>1</td><td>16:25:20 09/20/2017</td></tr>
<tr><td>000</td><td>Alarm 8</td><td>1</td><td>16:25:20 09/20/2017</td></tr>
<tr><td>000</td><td>Alarm 9</td><td>1</td><td>16:25:20 09/20/2017</td></tr>
<tr><td>001</td><td>Alarm 10</td><td>1</td><td>16:25:20 09/20/2017</td></tr>
</table>
</td></tr>
<tr><td rowspan="7">(6)</td><td rowspan="7">Title</td><td rowspan="3">Text Alignment</td><td colspan="2">Set the column title to align left, center, or right.</td></tr>
<tr><td>Align Left</td><td> 
</td></tr>
<tr><td>Center</td><td> 
</td></tr>
<tr><td>Align Right</td><td> 
</td></tr>
<tr><td rowspan="2">Back-ground</td><td colspan="2">Set the background color of the column title.</td></tr>
<tr><td>Default</td><td> 
</td></tr>
<tr><td>After change</td><td> 
</td></tr>
<tr><td rowspan="2">Text Color</td><td colspan="2">Set the text color of the column title.</td></tr>
<tr><td>Default</td><td> 
</td></tr>
<tr><td>After change</td><td> 
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Property</th><th colspan="2">Function description</th></tr>
<tr><td rowspan="3">(7)</td><td rowspan="3">Date and time</td><td>Date Format</td><td>Select the display format for the date from the following options.
 
</td></tr>
<tr><td>Time Format</td><td>Select the display format for the time from the following options.
 
</td></tr>
<tr><td>Color</td><td>Set the displaying color of the date and time.
Default
 

After change
 
</td></tr>
</table>

■ Coordinates

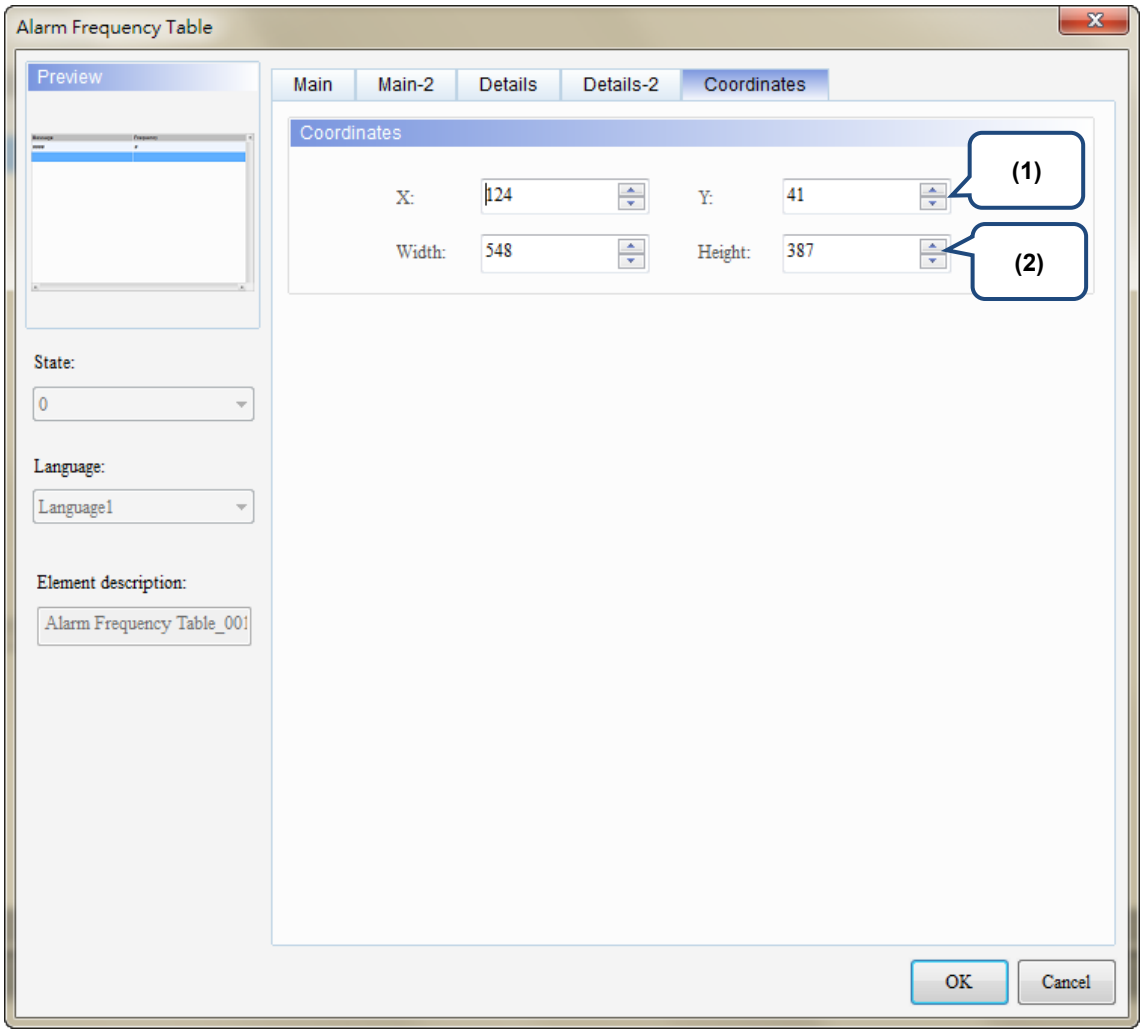


Figure 12.3.5 [Coordinates] property page for the Alarm Frequency Table element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

12.4 Alarm Moving Sign

The Alarm Moving Sign element records the alarm number, the time and date the alarm is triggered. You can also define the interval and moving distance of the Alarm Moving Sign.

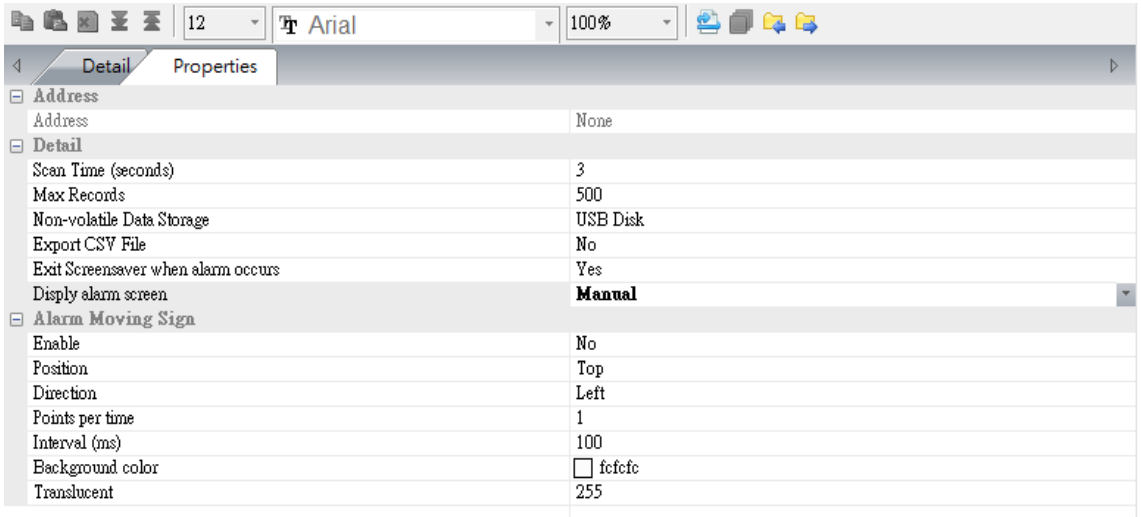
The settings of this element are the same as the Alarm Moving Sign parameter settings in [Options] > [Alarm Settings]. You can use this Alarm Moving Sign element and the Alarm Moving Sign in the [Alarm Settings] at the same time, but the main difference is the Alarm Moving Sign generates a moving sign message when an alarm is triggered regardless of the operating page you are on. In addition, both settings are independent and do not cross reference.

Please refer to Table 12.4.1 for the Alarm Moving Sign example.

Table 12.4.1 [Alarm Moving Sign] example

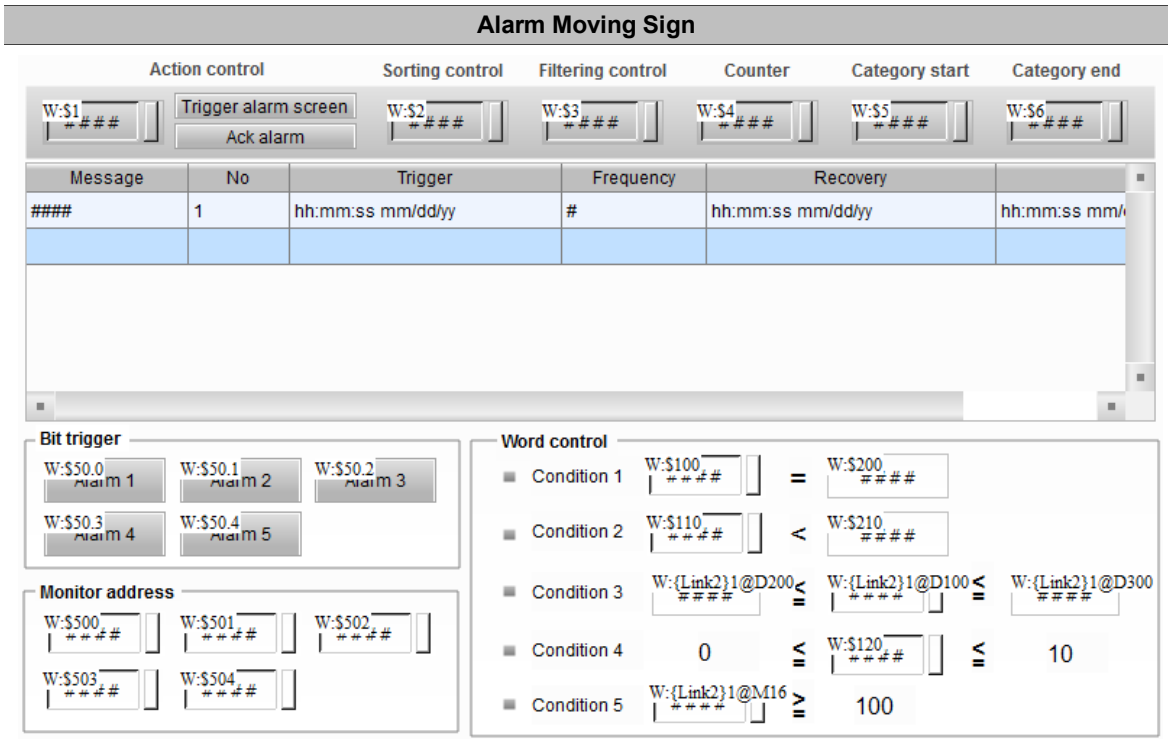
Alarm Moving Sign

This example uses the alarm parameters in Table 12.1 [Alarm Settings] example.



Detail | Properties

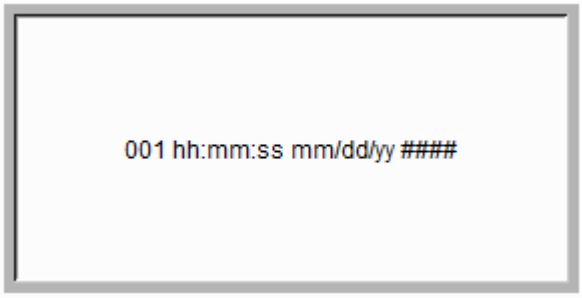
No.	Message Content	Category	Type	Address	Trigger Condition	Monitor Address	Text Color	Alarm Screen	Mail
1*	alarm 1 %d1 度	1	Bit	$50.0	On	$500	RGB(0, 0, 0)	2 - Screen_2	
2*	alarm 2 %d1 斤	1	Bit	$50.1	On	$501	RGB(0, 0, 0)	None	
3*	alarm 3 %d1 克	1	Bit	$50.2	On	$502	RGB(0, 0, 0)	None	
4*	alarm 4 %d1 尺	1	Bit	$50.3	On	$503	RGB(0, 0, 0)	None	
5*	alarm 5 %d1 吋	1	Bit	$50.4	On	$504	RGB(0, 0, 0)	None	
6*	alarm 6	5	Word	$100	$100 = $200	None	RGB(0, 0, 0)	2 - Screen_2	
7*	alarm 7	5	Word	$110	$110 < $210	None	RGB(0, 0, 0)	None	
8*	alarm 8	5	Word	{Link2}1@D100	{Link2}1@D200 <= {Link2}1@D100 <= {Link2}1@D300	None	RGB(0, 0, 0)	None	
9*	alarm 9	5	Word	$120	0 <= $120 <= 10	None	RGB(0, 0, 0)	None	
10*	alarm 10	5	Word	{Link2}1@M16	{Link2}1@M16 = 100	None	RGB(0, 0, 0)	None	



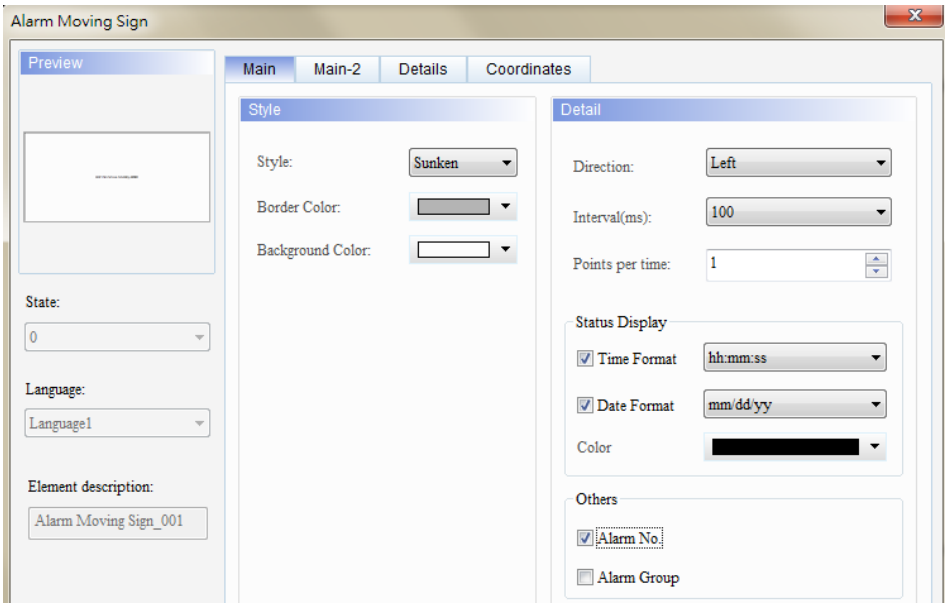
Add Alarm Moving Sign element

Please refer to the following steps:

1. Create Alarm Moving Sign element.



2. Check [Time Format], [Date Format], and [Alarm No.] Then, the Alarm Moving Sign will display the number of the alarm, the time and date the alarm is triggered, and alarm message.



<table>
<tr><th colspan="3">Alarm Moving Sign</th></tr>
<tr><td rowspan="3">Execution results</td><td colspan="2">■ After creating the Alarm Moving Sign element, please compile and download the element to the HMI. When the conditions are met for Alarms 6 - 10, the Alarm Moving Sign shows the current alarm time and date, alarm number, and alarm message.
■ After the alarm is cleared, the Alarm Moving Sign will not show any alarm.</td></tr>
<tr><td>Alarm ON</td><td>
</td></tr>
<tr><td>Alarm OFF</td><td> </td></tr>
</table>

The following figure shows the property setting screen when you double-click the Alarm Moving Sign.

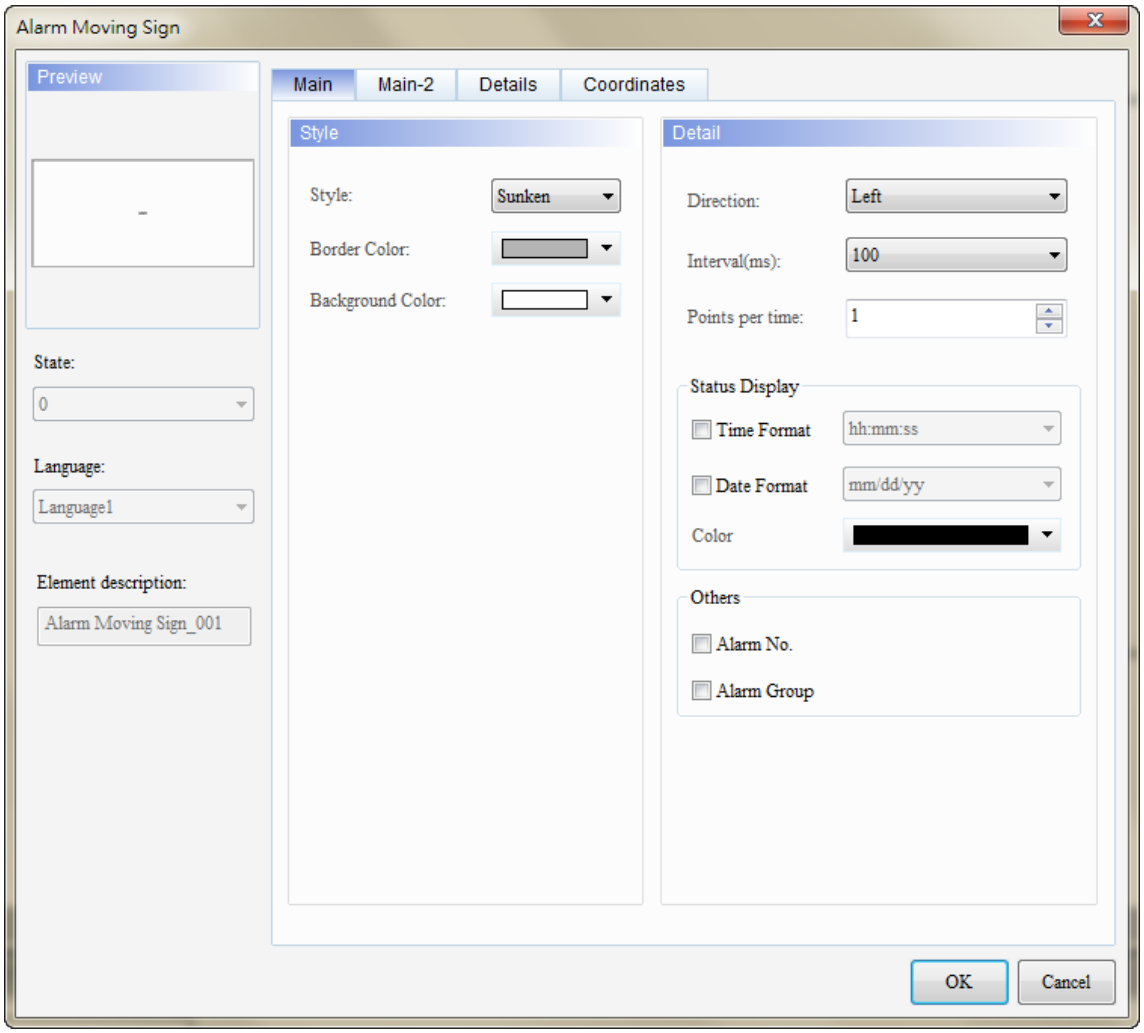


Figure 12.4.1 Properties of the [Alarm Moving Sign]

Table 12.4.2 Function page for the [Alarm Moving Sign]

Alarm Moving Sign	
Function Page	**Description**
Preview	Alarm Frequency Table elements do not support multiple status values and multi-language data display.
Main	Set the element's style, border color, background color, display direction, interval time (ms), moving points per time, time and date formats, display color, alarm number, and alarm group.
Main-2	Set the [Transparent], [Animation], and [Anti-aliasing].
Details	Set the [Filter control address], [Alarm group start addr.], and [Alarm group end addr.]. (Please refer to the Alarm History Table example.)
Coordinates	Set the X and Y coordinates, width, and height of the elements.

■ Main

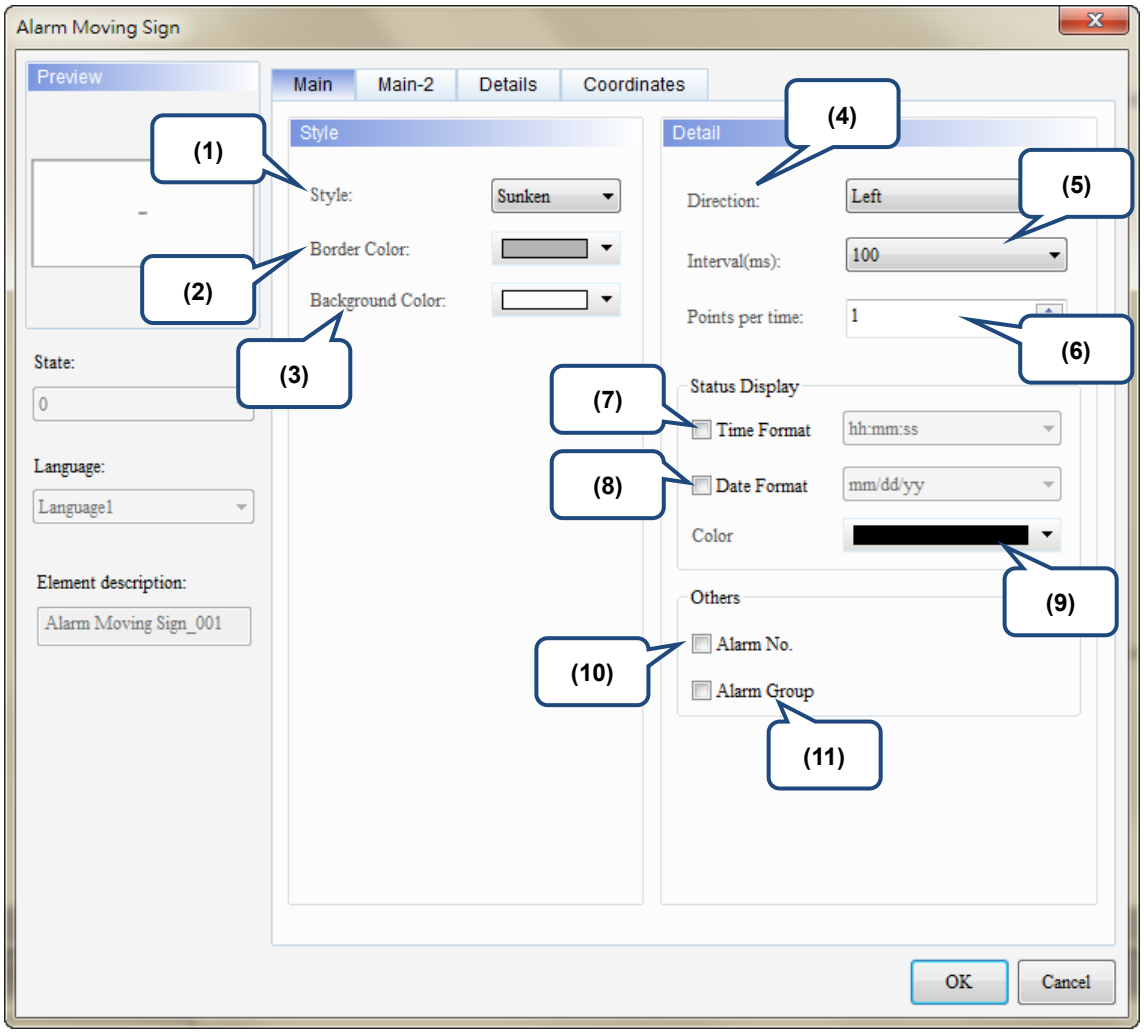
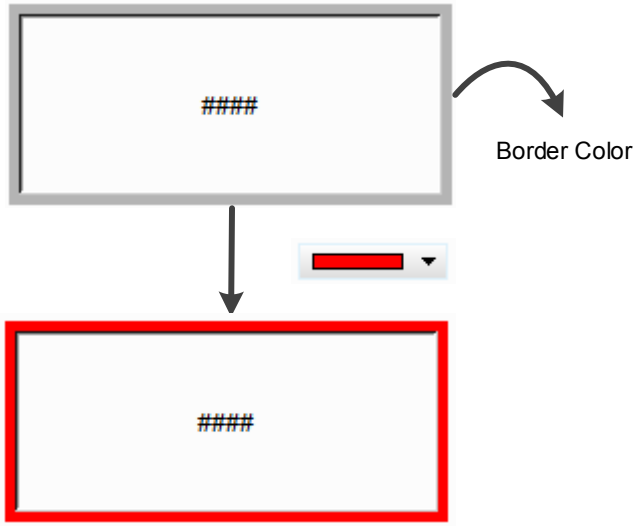
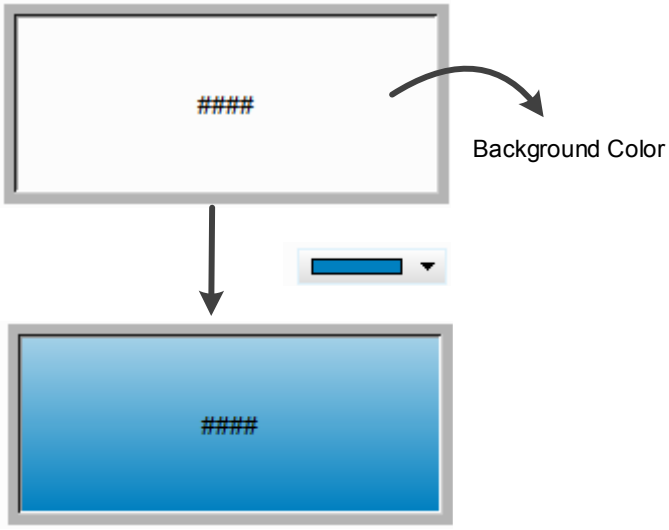
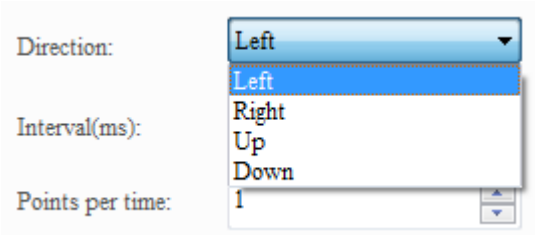
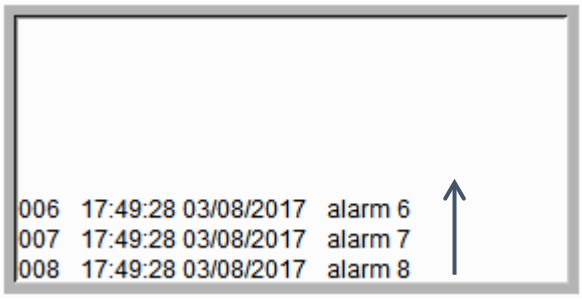
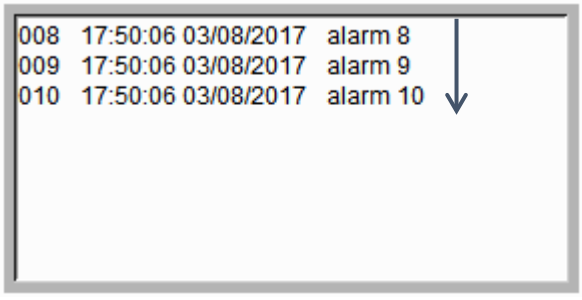


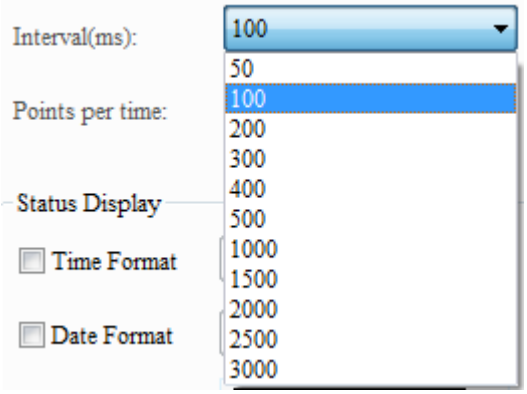
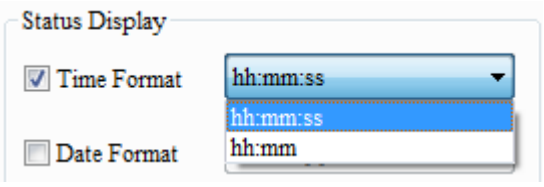
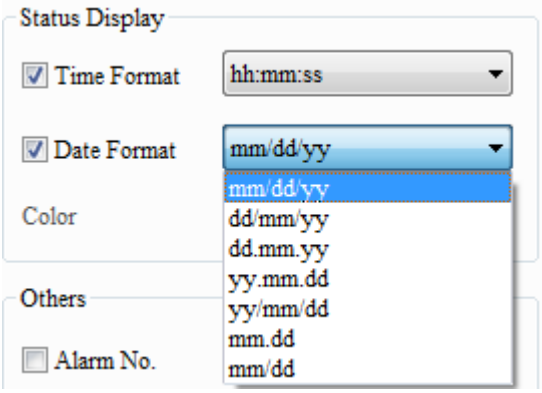
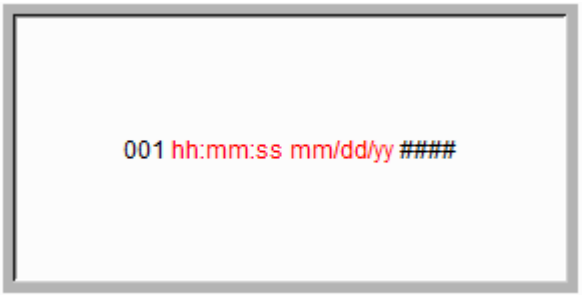
Figure 12.4.2 [Main] property page for the Alarm Moving Sign element

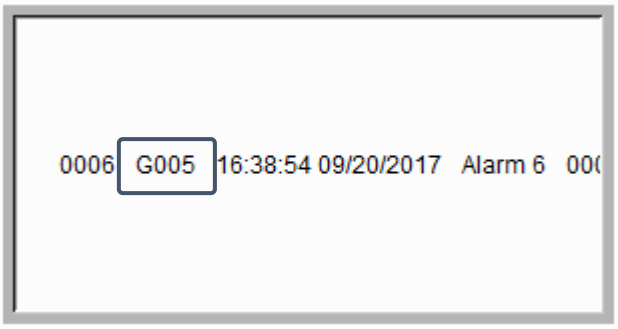
No.	Property	Function description
(1)	Style	There are four element styles to choose from: Standard, Raised, Sunken, and Transparent. You can change the appearance of the element with this setting.

Standard	Raised	Sunken	Transparent
####	####	####	####

No.	Property	Function description
(2)	Border Color	Set the border color of the element. The default is gray. 
(3)	Background Color	Set the background color of the element. The default is white. 

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td rowspan="4">(4)</td><td rowspan="4">Direction</td><td>There are four display directions to choose from: Left, Right, Up, and Down.
 
</td></tr>
<tr><td>Left
</td></tr>
<tr><td>Right
</td></tr>
<tr><td>Up
 
</td></tr>
<tr><td>Down
 
</td></tr>
</table>

No.	Property	Function description
(5)	Interval (ms)	The [Interval (ms)] defines the interval time (unit: ms) between two message movements of the Alarm Moving Sign. And you can set the moving distance in [Points per time]. 
(6)	Points per time	The larger the moving points, the greater the distance the text moves each time. The setting range is 1 - 50 pixels.
(7)	Time Format	Two time formats are supported. 
(8)	Date Format	Seven date formats are supported. 
(9)	Color	You can change the display color of the time and date with the [Color] option. The default is . 

No.	Property	Function description
(10)	Alarm No.	If you check [Alarm No.], the element shows the alarm number when an alarm is triggered.
(11)	Alarm Group	If you check [Alarm Group], the element shows the alarm group when an alarm is triggered. 

■ Main-2

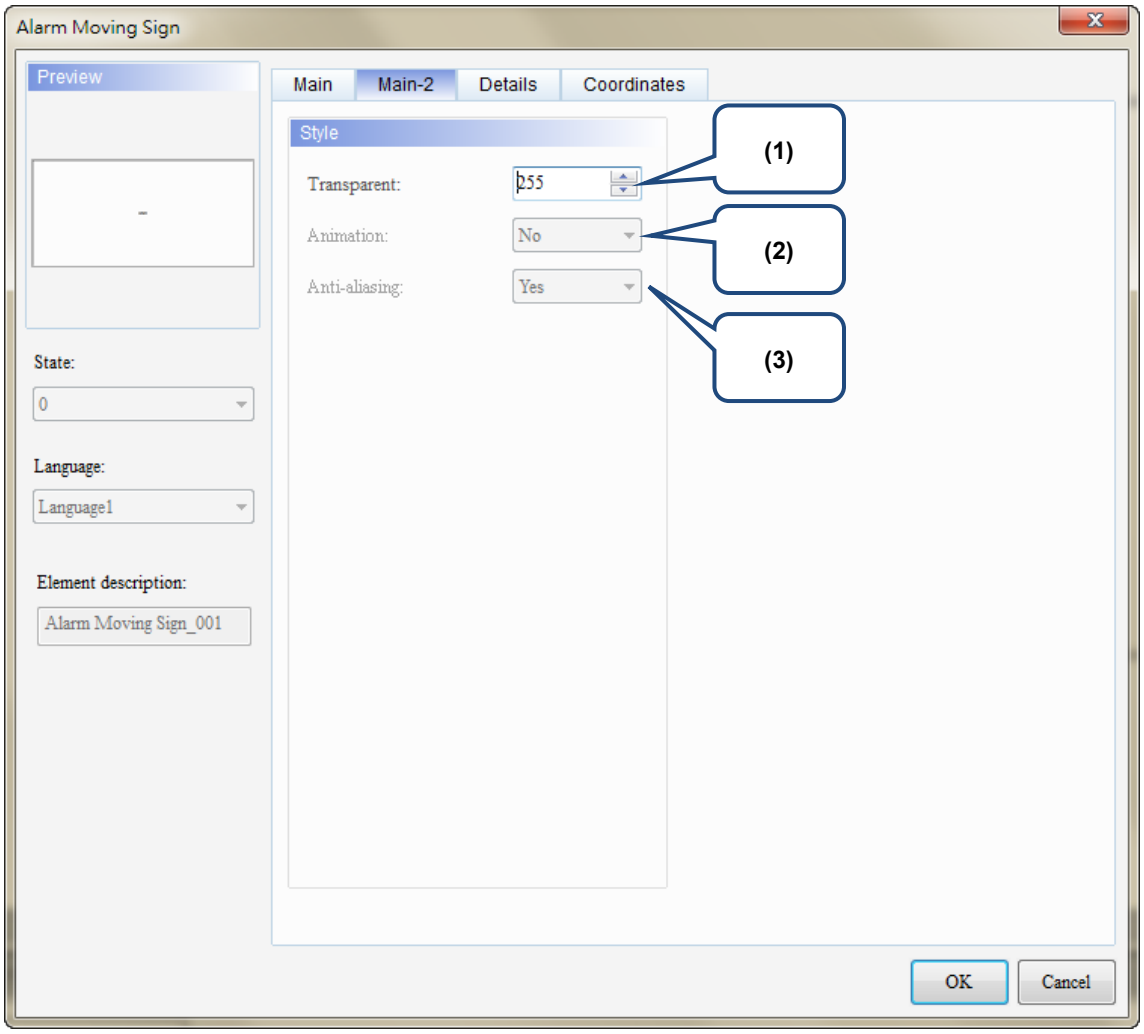


Figure 12.4.3 [Main-2] property page for the Alarm Moving Sign element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Animation	The [Animation] function is not available for this element.
(3)	Anti-aliasing	The [Anti-aliasing] function is not available for this element.

■ Coordinates

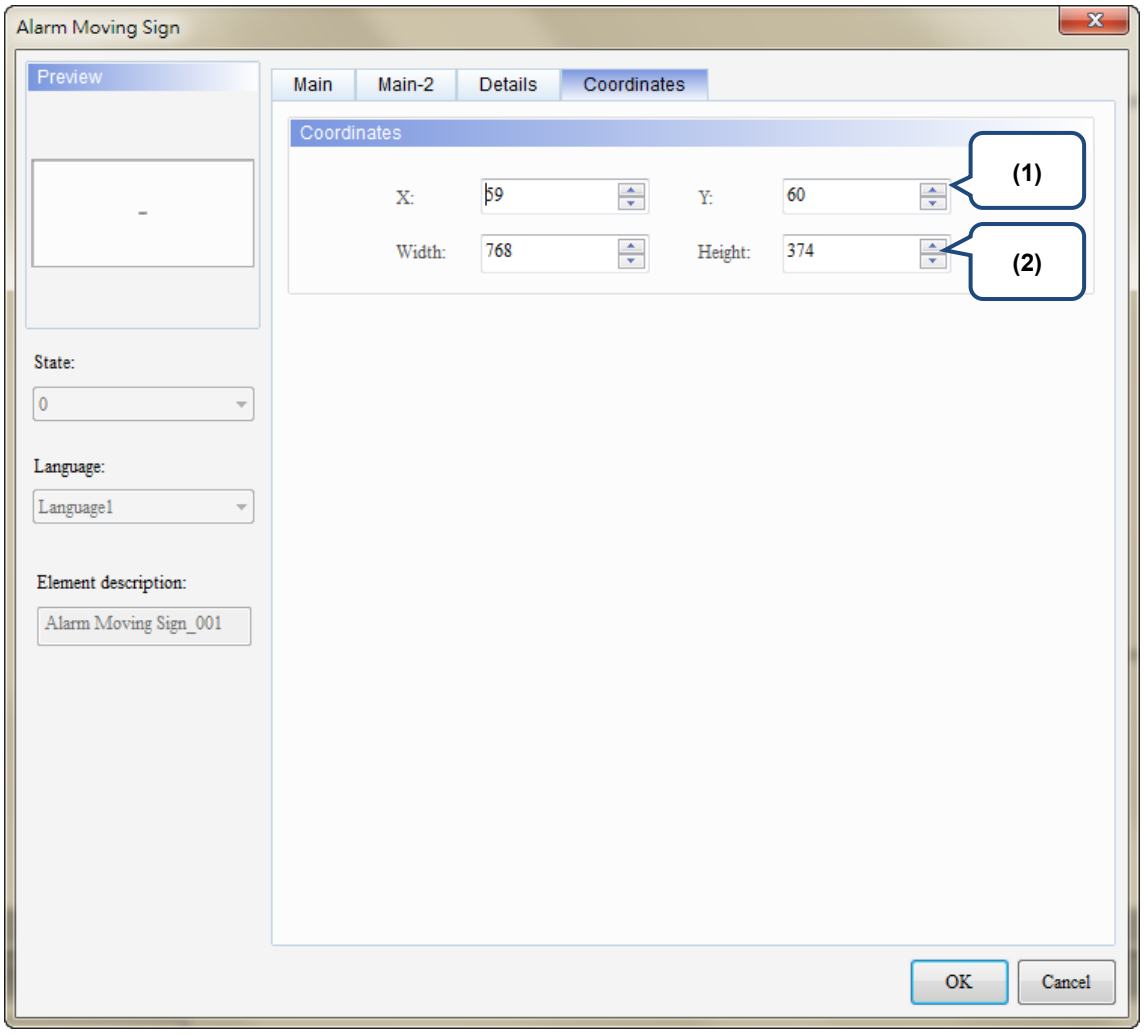


Figure 12.4.4 [Coordinates] property page for the Alarm Moving Sign element

No.	Property	Function description
(1)	X value and Y value	Set the upper left X coordinate and Y coordinate of the elements.
(2)	Width and Height	Set the width and height of the elements.

13. Keypad

The keypad provides an animation function that enlarges the key you are pressing.

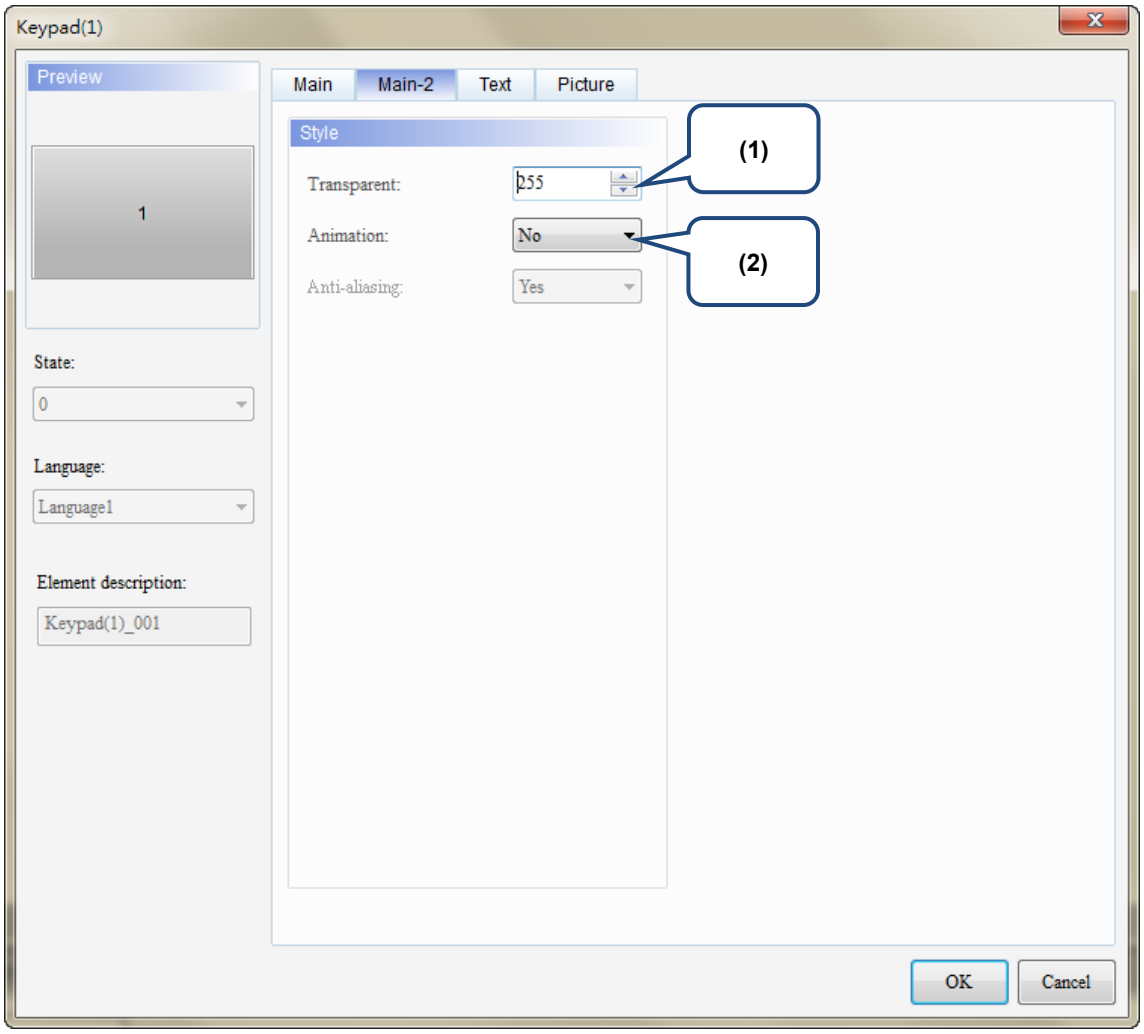
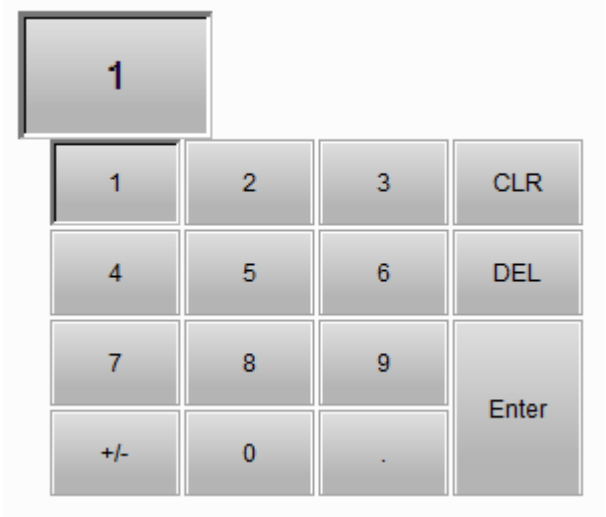


Figure 13.1 [Main-2] property page for the Keypad (1) element

<table>
<tr><th>No.</th><th>Property</th><th>Function description</th></tr>
<tr><td>(1)</td><td>Transparent</td><td>You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.</td></tr>
<tr><td>(2)</td><td>Animation</td><td>■ The [Animation] function is available for this element.
■ After ungrouping the keypad elements, you can activate the animation function per button. When you activate the animation function, the keys with this setting will enlarge when you press it.
Yes
 

No
</td></tr>
</table>

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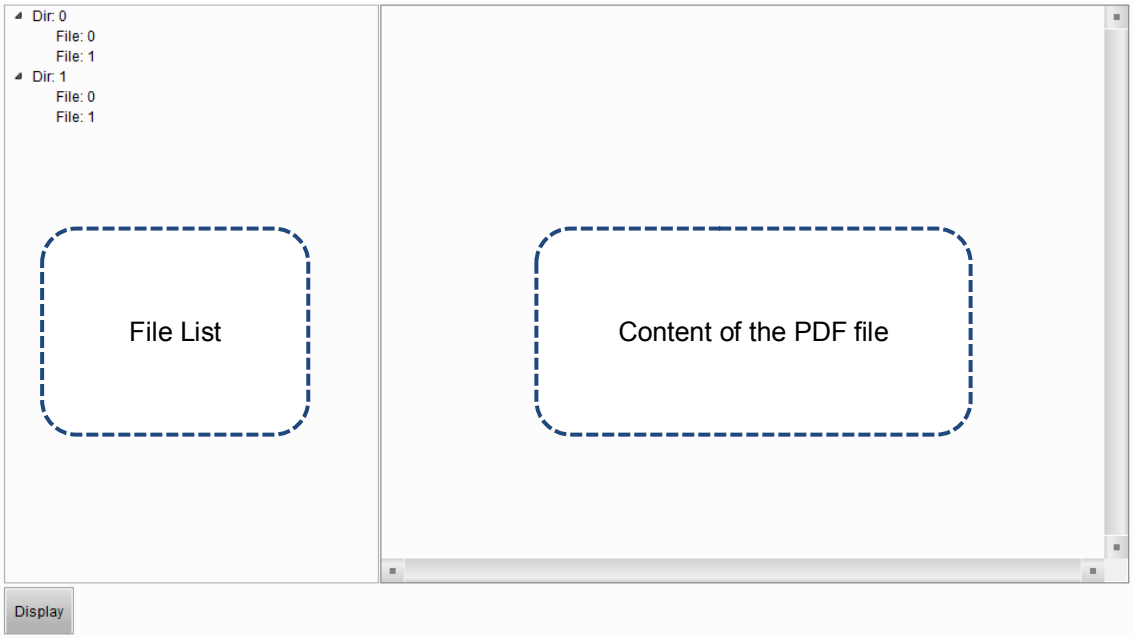
14. PDF View

The PDF View function allows you to read PDF files on the HMI by saving the PDF files in an external storage device and inserting it to the HMI. With this feature, you can view the operation steps without a PC or printouts, which can increase convenience and efficiency.

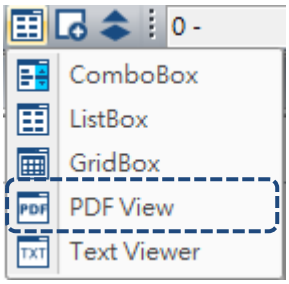
The PDF View is divided into two sections: the file list is on the left and the content of the PDF file is displayed on the right.

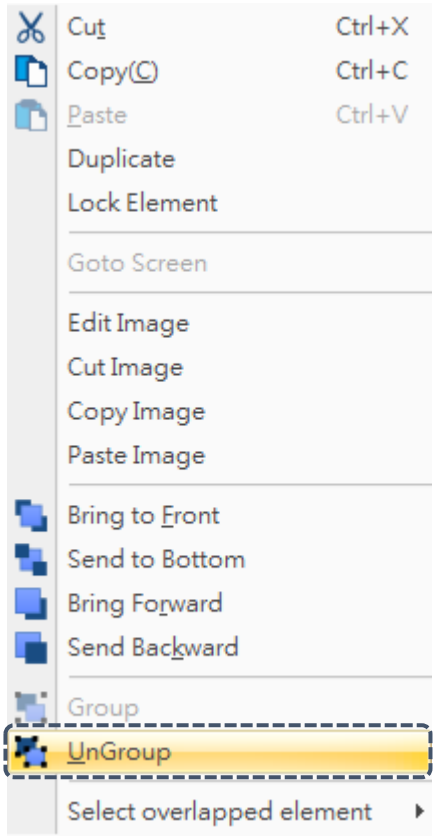
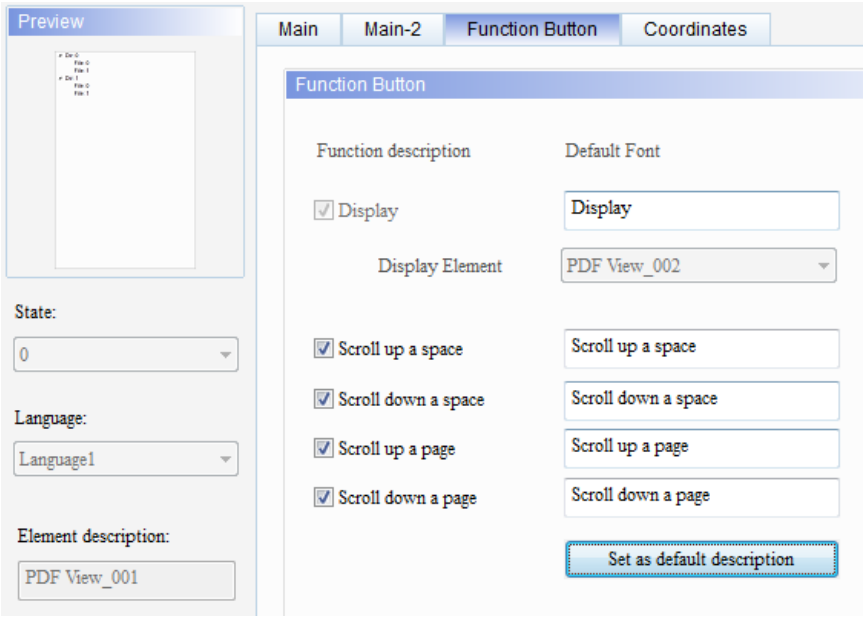


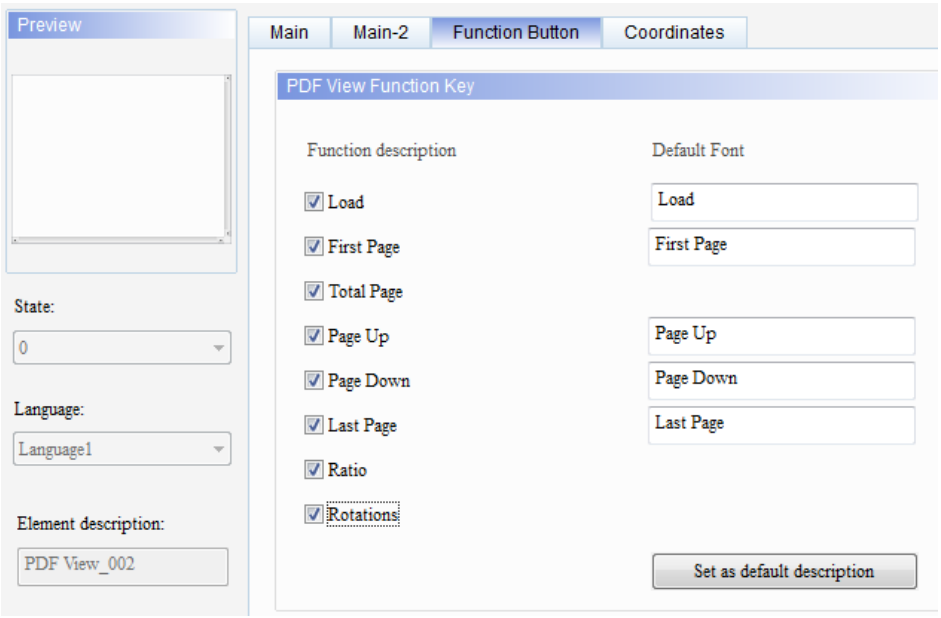
PDF files are displayed on the HMI from the external storage device, so if the USB Disk or SD Card read and write speed is too slow or the PDF file size is too big, the displaying speed of the PDF file will be affected.

Please refer to Table 14.1 for the PDF View example.

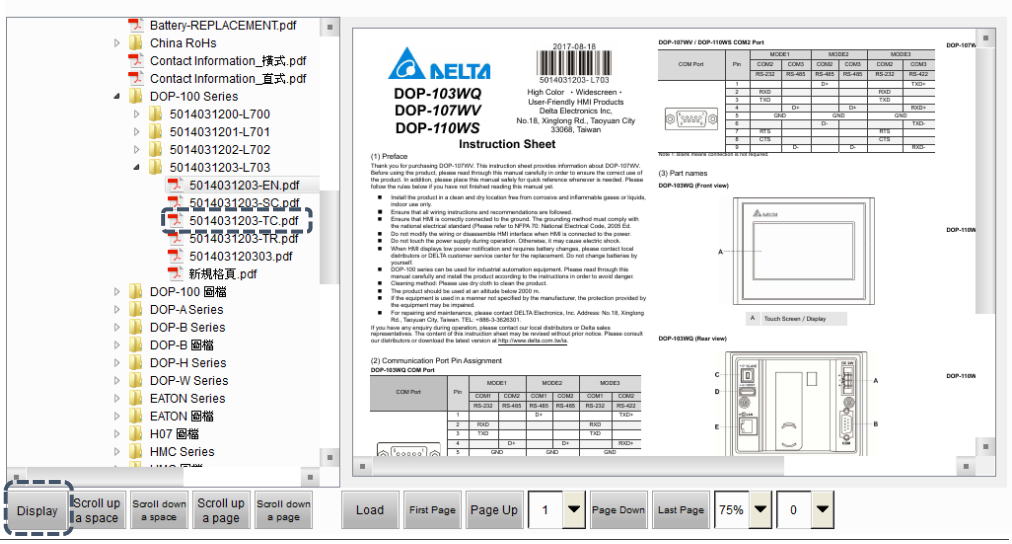
Table 14.1 [PDF View] example

PDF View	
Create PDF View element	Please refer to the following steps: 1. Create PDF View element. 

PDF View	
Set File List	2. Click [PDF View], then right click and select [UnGroup].  3. Click the File List on the left to go to the [Function Button] page, and the setting is as follows: 

PDF View	
Set display content	4. Click the display content on the right to go to the [Function Button] page, and the setting is as follows:  5. When the setting is complete, the PDF View screen is as follows:

PDF View	
Execution results	6. Please compile the screen prior to performing off-line simulation. Select the PDF file to display, press the **Display** button, then you can see the content of the PDF file displayed on the right.



The following will explain the properties of the File List on the left and the display content on the right.

The following figure shows the property setting screen when you double-click the File List on the left.

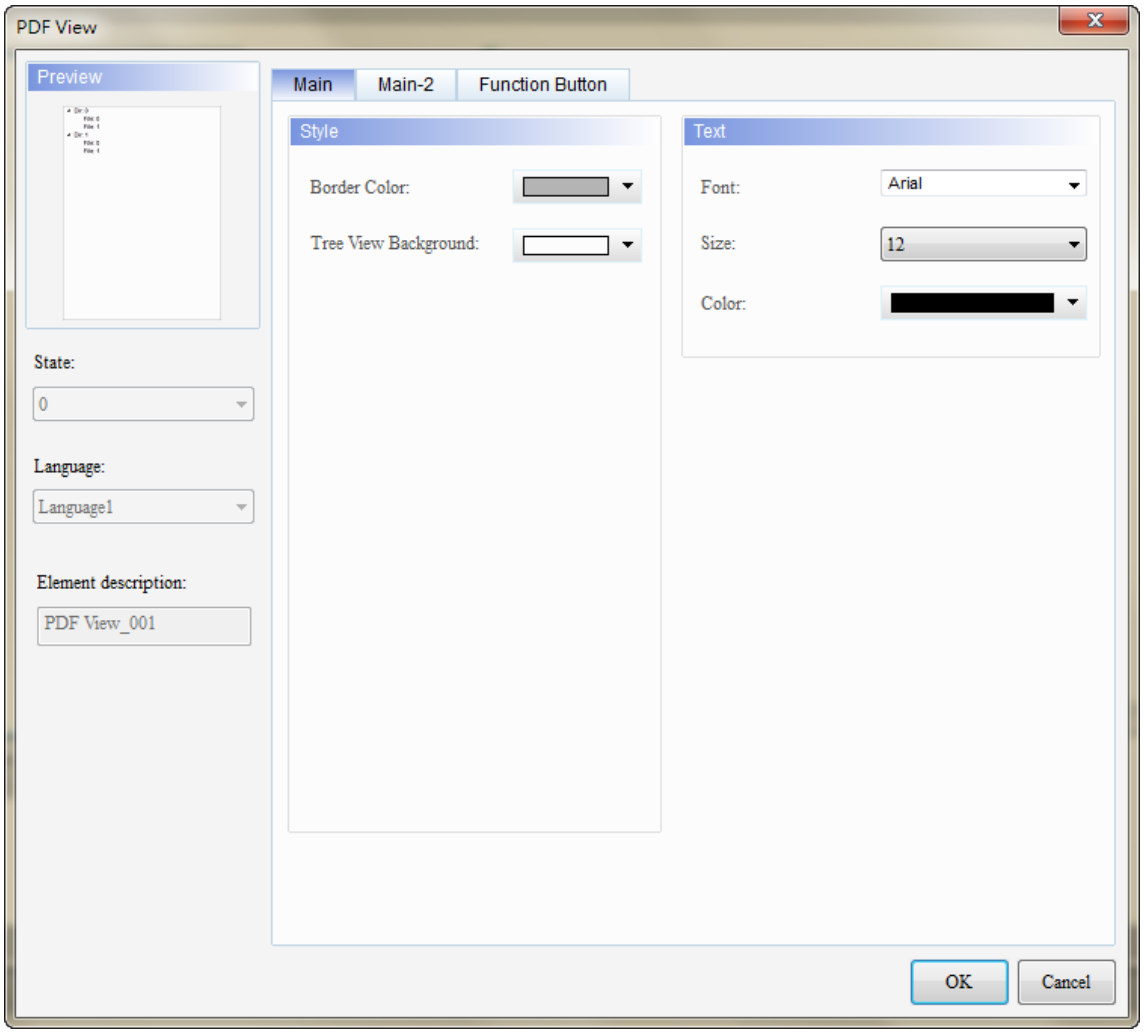


Figure 14.1 Properties of the [PDF View] File List

Table 14.2 Function page for the [PDF View] File List

PDF View (File List on the left)	
Function Page	**Description**
Main	Set the [Border Color] and [Tree View Background]. You can also set the font, size, and color of the texts.
Main-2	Set the [Transparent], [Animation], and [Anti-aliasing].
Function Button	Check [Scroll up a space], [Scroll down a space], [Scroll up a page], and [Scroll down a page], then click **Set as default description**. You can also set the width and height of the buttons.

■ Main

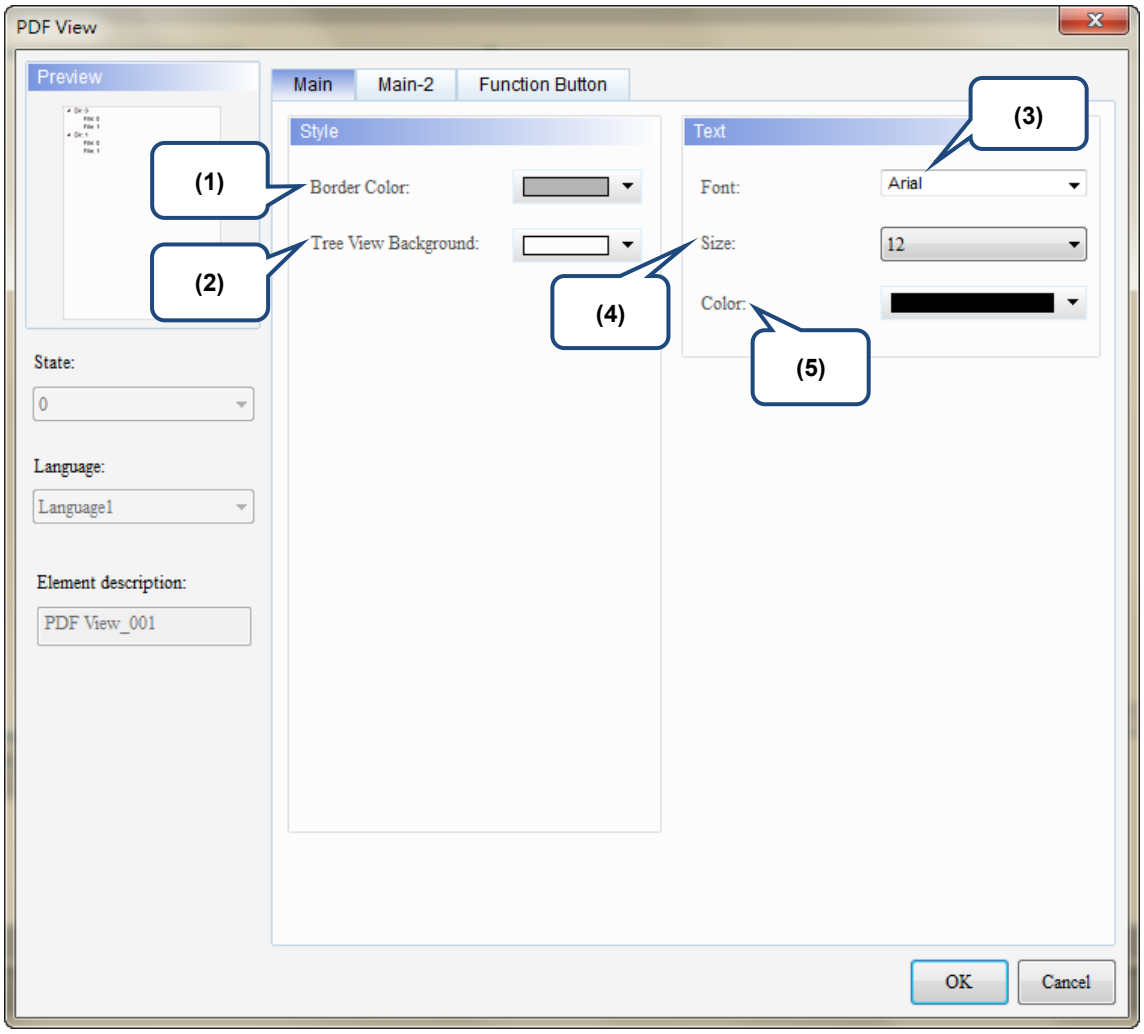
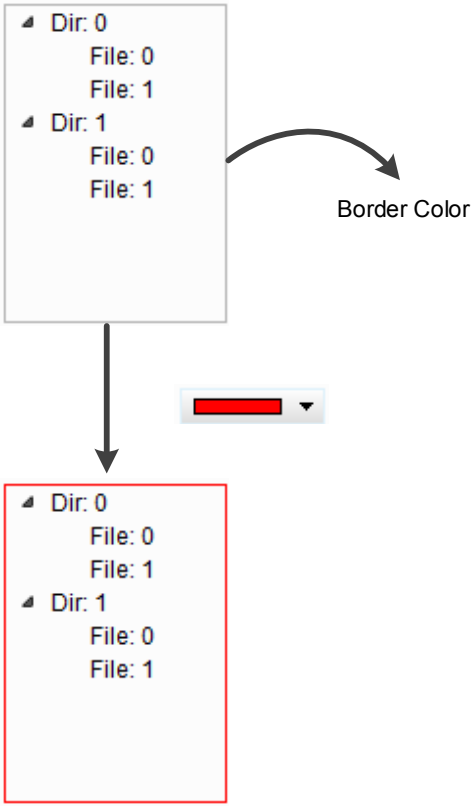
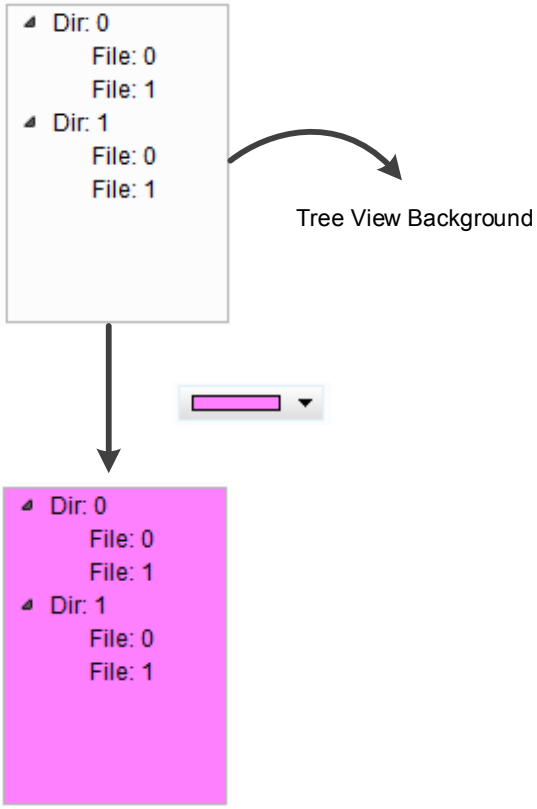


Figure 14.2 [Main] property page for the PDF View File List element

No.	Property	Function description
(1)	Border Color	Set the border color of the File List on the left. 
(2)	Tree View Background	Set the tree view background color of the File List on the left. 
(3)	Font	Set the text font for the File List on the left.
(4)	Size	Set the text size for the File List on the left.
(5)	Color	Set the text color for the File List on the left.

■ Main-2

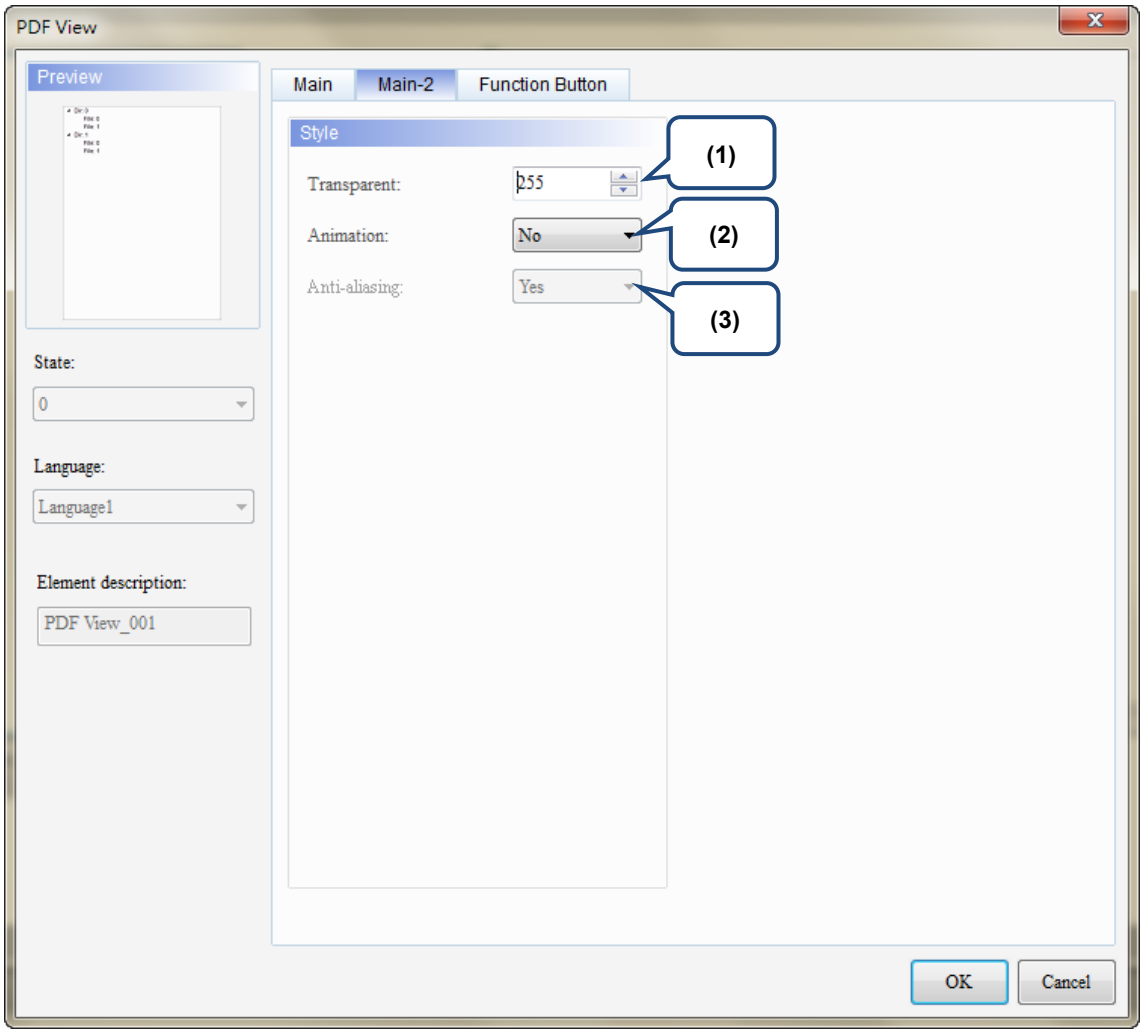


Figure 14.3 [Main-2] property page for the PDF View File List element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Animation	The [Animation] function is available for this element. When you activate the [Animation] function, there is a sliding effect when the File List expands or retracts.
(3)	Anti-aliasing	The [Anti-aliasing] function is not available for this element.

■ Function Button

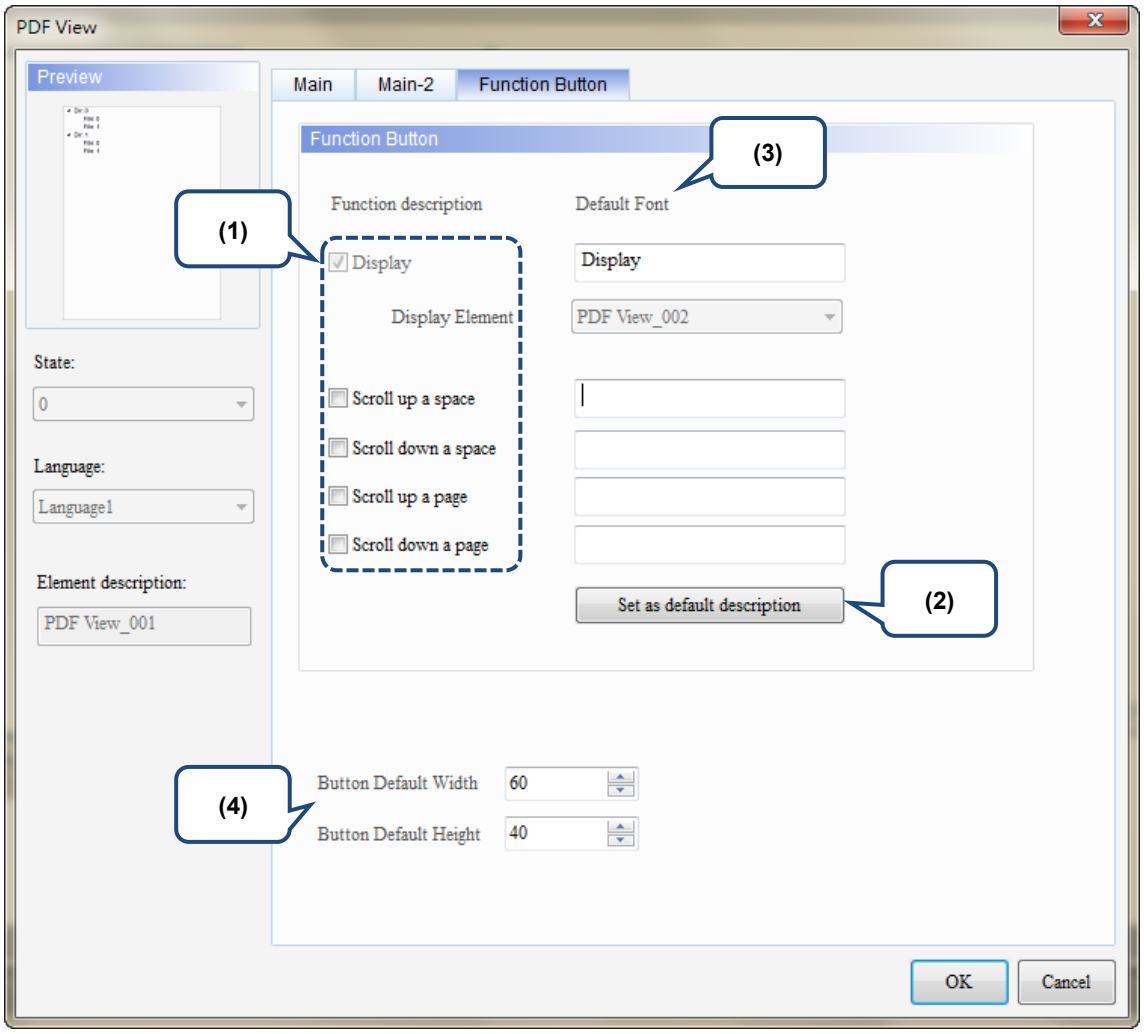


Figure 14.4 [Function Button] property page for the PDF View File List element

No.	Property	Function description
(1)	Function Button	■ These are function buttons for the File List. [Display] is checked by default and cannot be unchecked. ■ Other function buttons include [Scroll up a space], [Scroll down a space], [Scroll up a page], and [Scroll down a page], which are used to scroll the File List and determine the scrolling range.
(2)	Set as default description	Click this button to insert the default texts to the spaces above.
(3)	Default text	Click **Set as default description** to insert the default texts to the spaces. You can also enter user-defined texts.
(4)	Button Default Width and Height	You can adjust the width and height of the function buttons.

The following figure shows the property setting screen when you double-click the display content on the right.

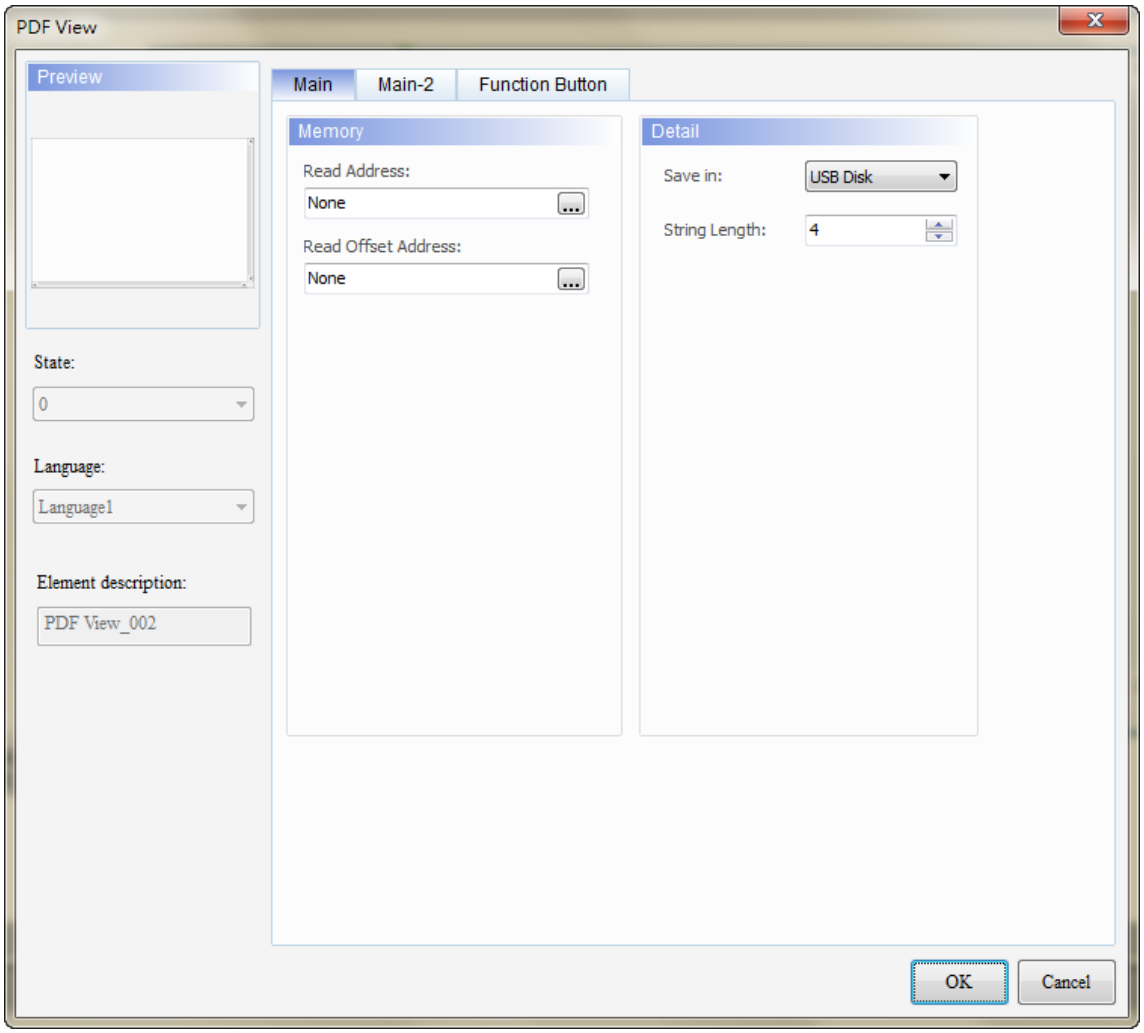


Figure 14.5 Properties of the [PDF View] display content

Table 14.3 Function page for the [PDF View] display content element

PDF View (display content on the right)	
Function Page	**Description**
Main	Set the [Read Address] and [Read Offset Address]. You can also set the storage type and string length.
Main-2	Set the [Transparent], [Animation], and [Anti-aliasing].
Function Button	Check [Load], [First Page], [Total Page], [Page Up], [Page Down], [Last Page], [Ratio], and [Rotations], then click **Set as default description**. You can also set the width and height of the buttons.

■ Main

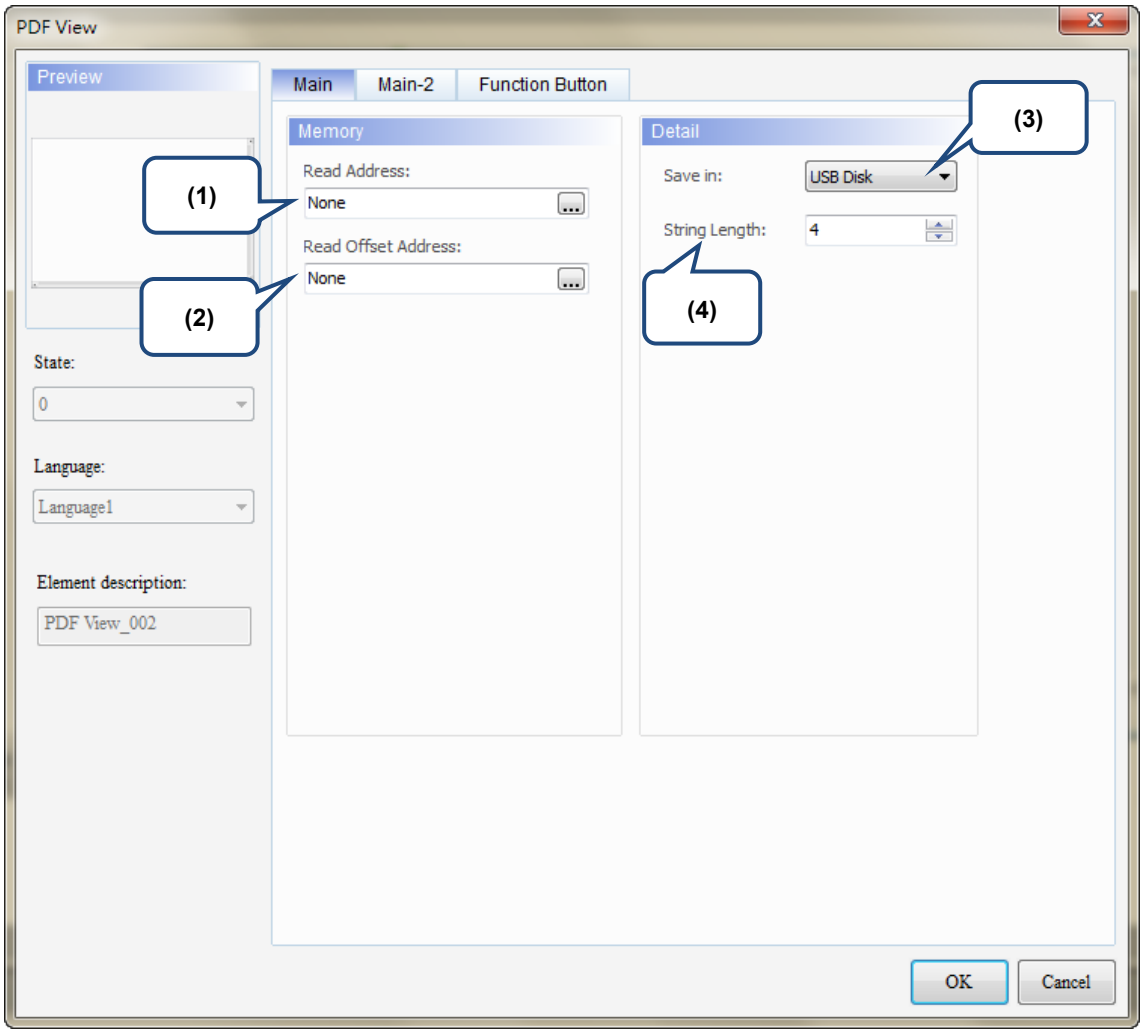


Figure 14.6 [Main] property page for the PDF View display content element

No.	Property	Function description
(1)	Read Address	■ You can select the internal memory or the controller register address. ■ Select Link Name or Element Style. ■ If you choose the [Read Address] setting, you need to create a Character Entry element and set the [String Length] for the PDF file to display on the HMI.
(2)	Read Offset Address	Please refer to Appendix D in the DOPSoft User Manual for instructions on writing and reading the offset address.
(3)	Save in	You can select USB Disk or SD Card as the storage device. When you save the PDF file in the USB Disk or SD Card, the HMI can read the PDF file from the storage device.
(4)	String Length	The [String Length] setting is mainly used with the Character Entry element. The length of the string determines the input file name of the PDF.

■ Main-2

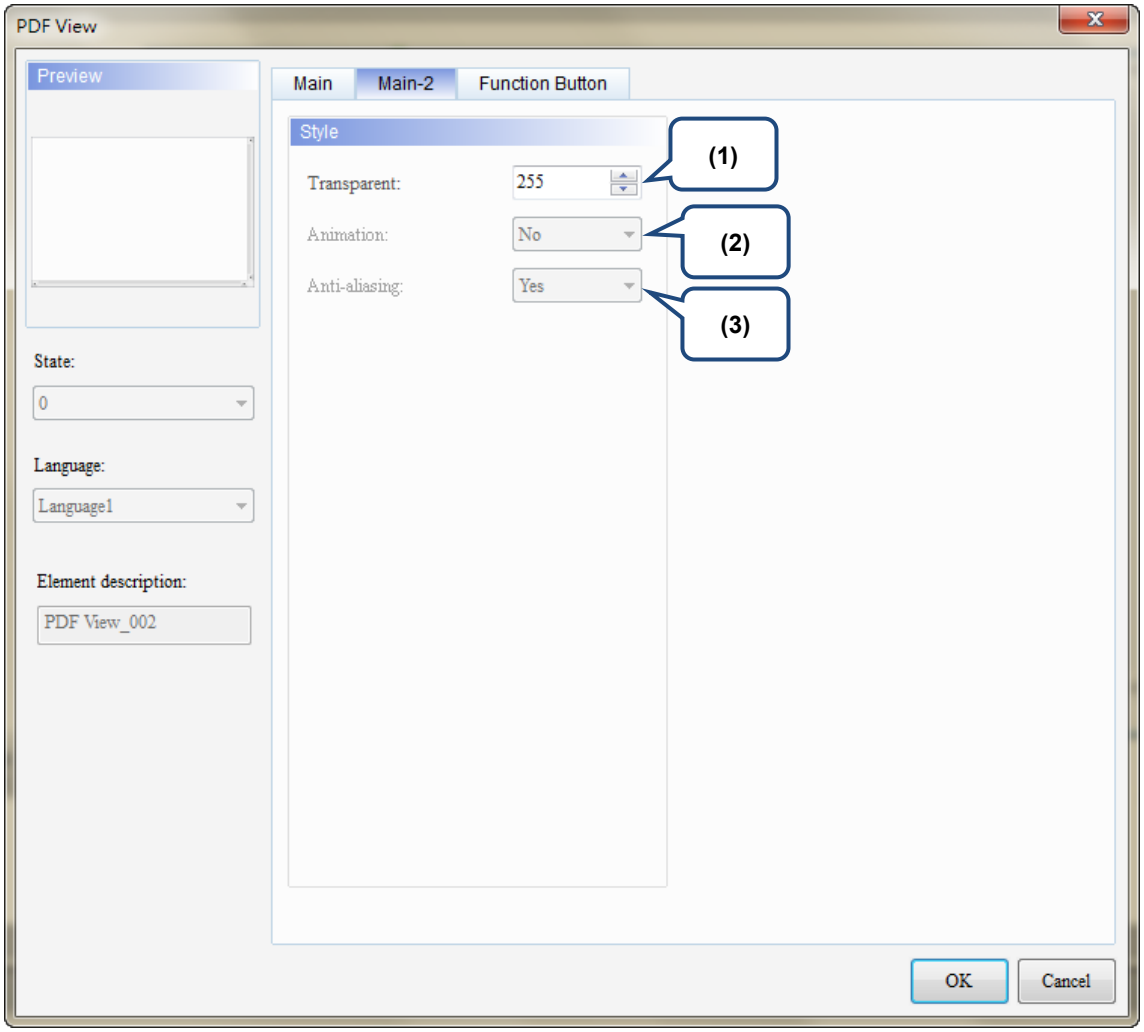


Figure 14.7 [Main-2] property page for the PDF View display content element

No.	Property	Function description
(1)	Transparent	You can set the transparency value within the range of 50 to 255. The default is 255. The smaller the value, the higher the transparency of the element.
(2)	Animation	The [Animation] function is not available for this element.
(3)	Anti-aliasing	The [Anti-aliasing] function is not available for this element.

■ Function Button

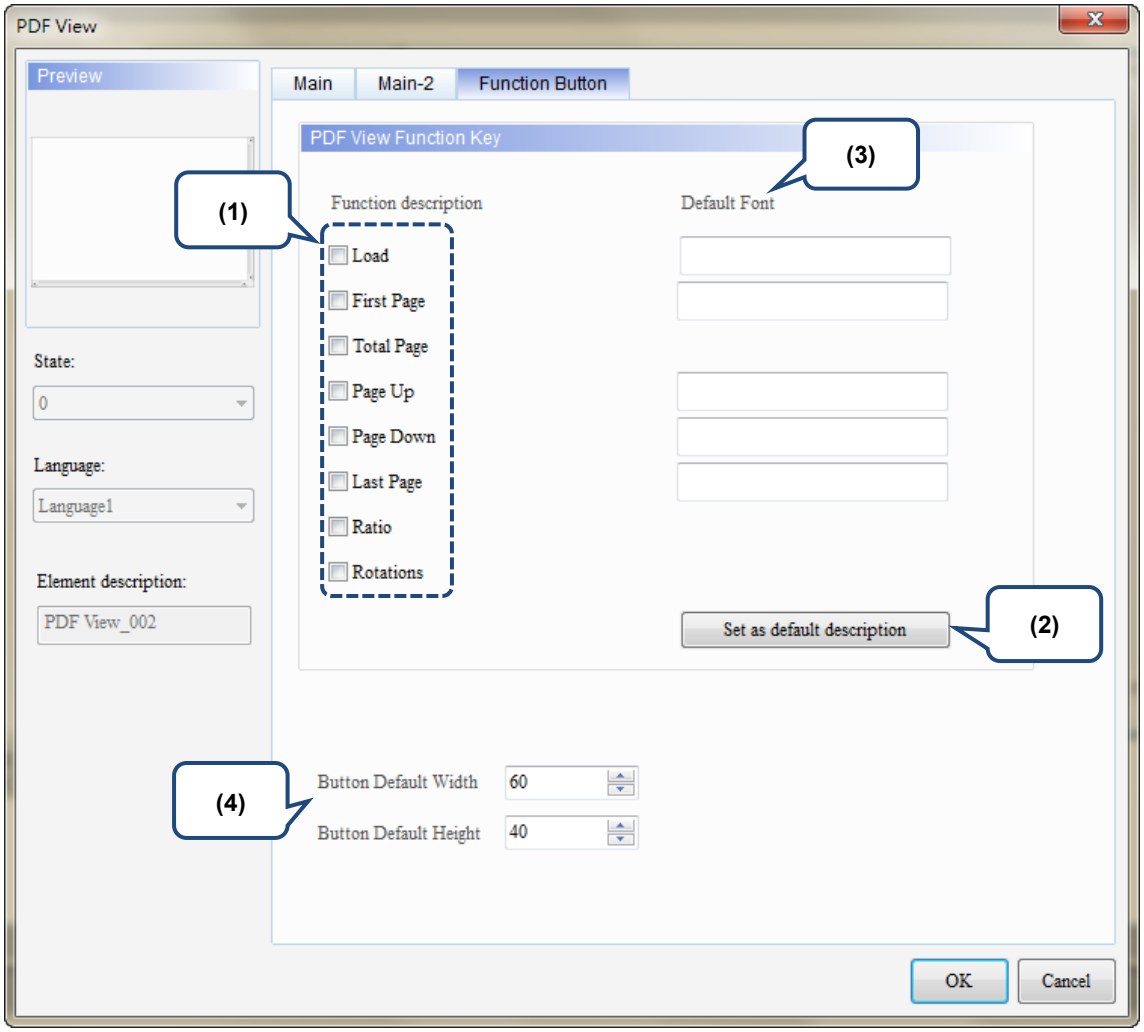


Figure 14.8 [Function Button] property page for the PDF View display content element

No.	Property	Function description
(1)	Function Button	■ These are function buttons for the display content, including [Load], [First Page], [Total Page], [Page Up], [Page Down], [Last Page], [Ratio], and [Rotations]. ■ The [Load] function button and the [Display] function button for the File List are both used to read and display PDF files, but the way to use them are different. ■ For the [Load] button, you need to manually enter the PDF file name and use the set [Read Address] to display the PDF file on the HMI. ■ As for the [Display] button, you do not need to enter the PDF file name. To display the PDF file on the HMI, you only need to save the PDF file to a USB Disk or SD Card.
(2)	Set as default description	■ Click this button to insert the default texts to the spaces above. ■ [Total Page], [Ratio], and [Rotations] do not have default descriptions.
(3)	Default text	Click **Set as default description** to insert the default texts to the spaces. You can also enter user-defined texts.
(4)	Button Default Width and Height	You can adjust the width and height of the function buttons.

15. Enhanced Recipe

DOP-100 provides an enhanced recipe that combines with the multi-language input element to name the recipe group. Unlike the previous ENRCPG register address, the users had to remember the recipe content and other information. With the added ENRCPGNAME register address, you can enter the recipe name to call the recipe which is more user-friendly.
Also, ENRCPGNAME names the group name in Unicode, so you can enter different languages. Therefore, please use the multi-language input element with the ENRCPGNAME register.

Please refer to Table 15.1 for the Enhanced Recipe example.

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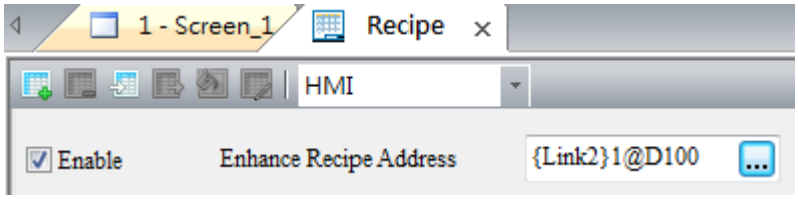
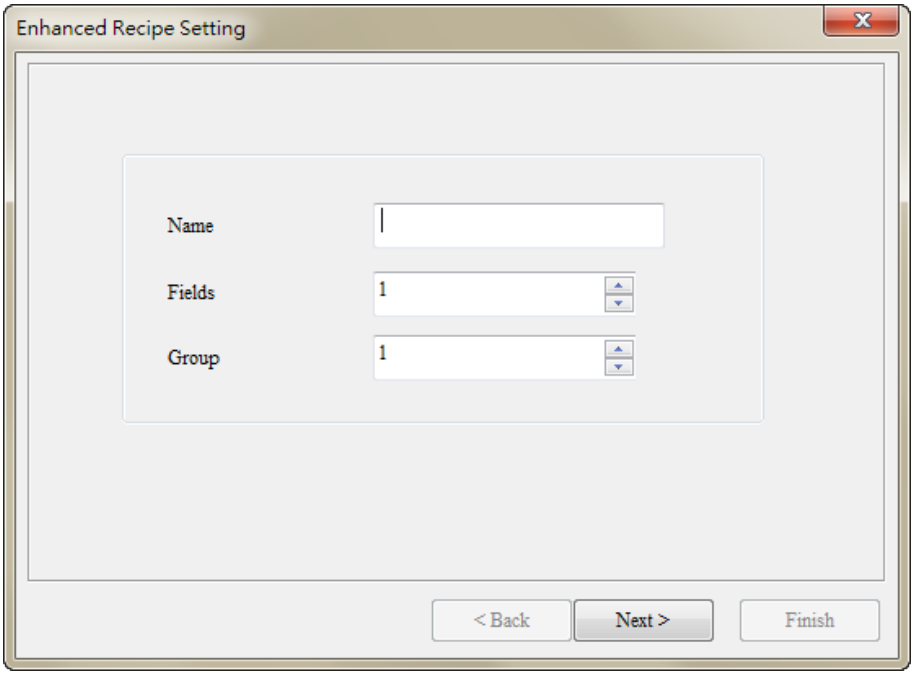
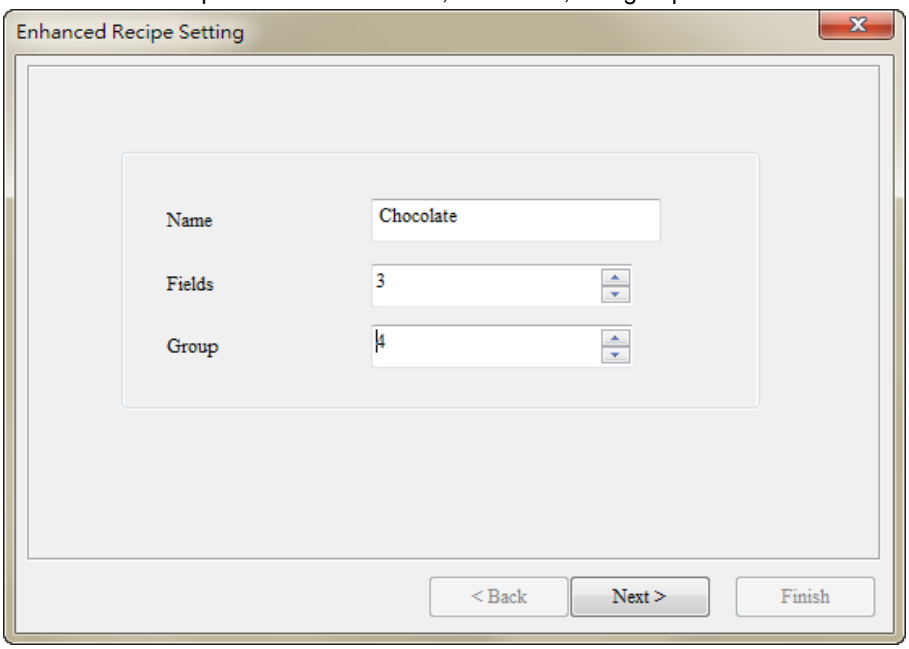
Table 15.1 [Enhanced Recipe] example

Enhanced Recipe	
Set Enhanced Recipe	Please refer to the following steps: 1. Go to [Options] > [Recipe] > [Enhanced Recipe]. Check [Enable] and set the [Enhanced Recipe Address] as D100.  2. Click for the [Enhanced Recipe Setting] window.  3. Set the first recipe name as Chocolate, fields as 3, and group as 4. 

Enhanced Recipe

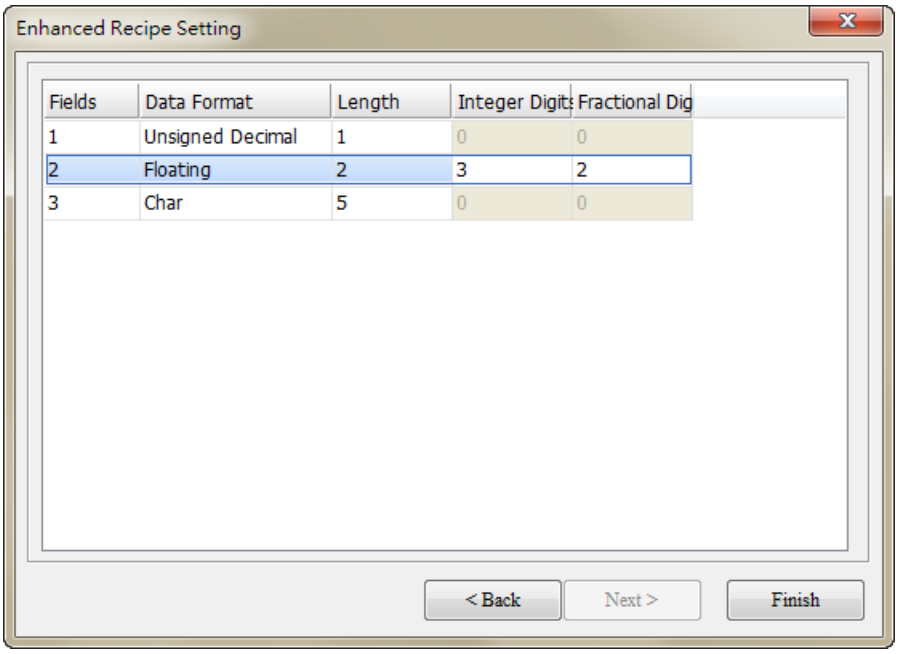
Set Enhanced Recipe

4. Set the [Data Format] as follows:

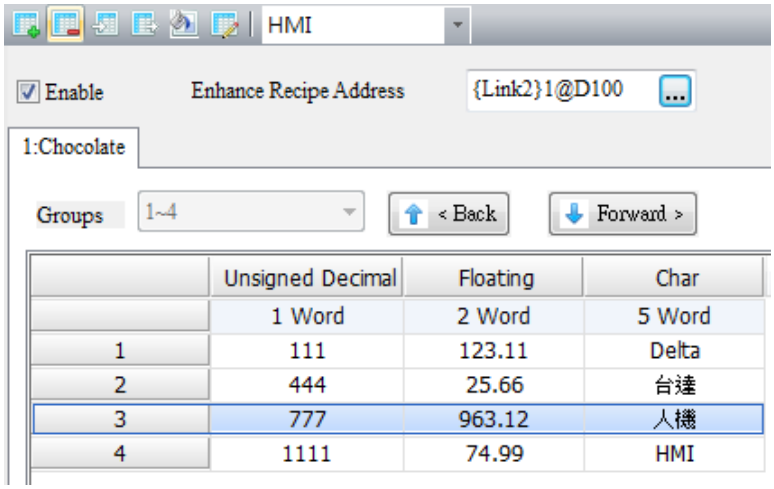
Field 1: Unsigned Decimal; set the length as 1.

Field 2: Floating; set the length as 2, integer digit as 3, and fractional digit as 2.

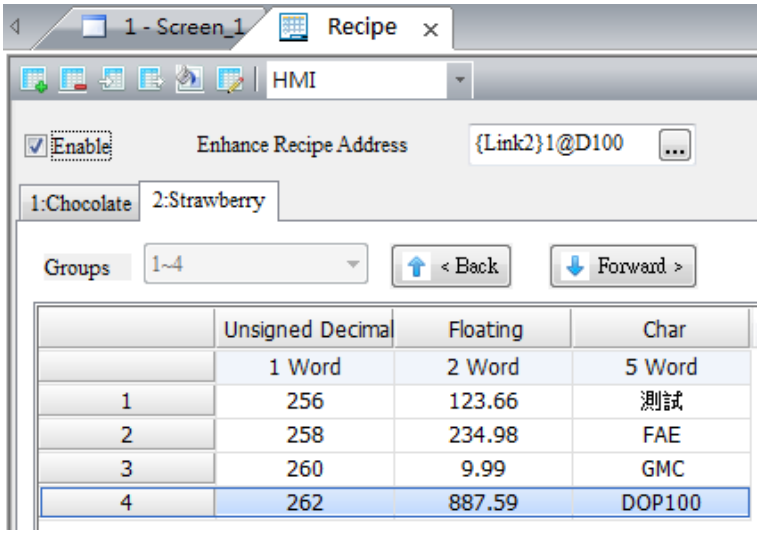
Field 3: Char; set the length as 5.

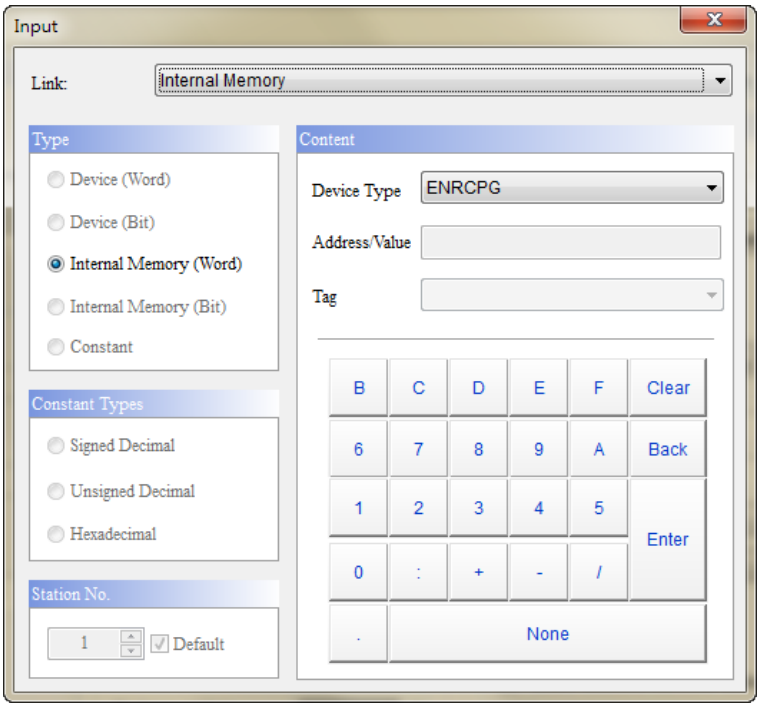
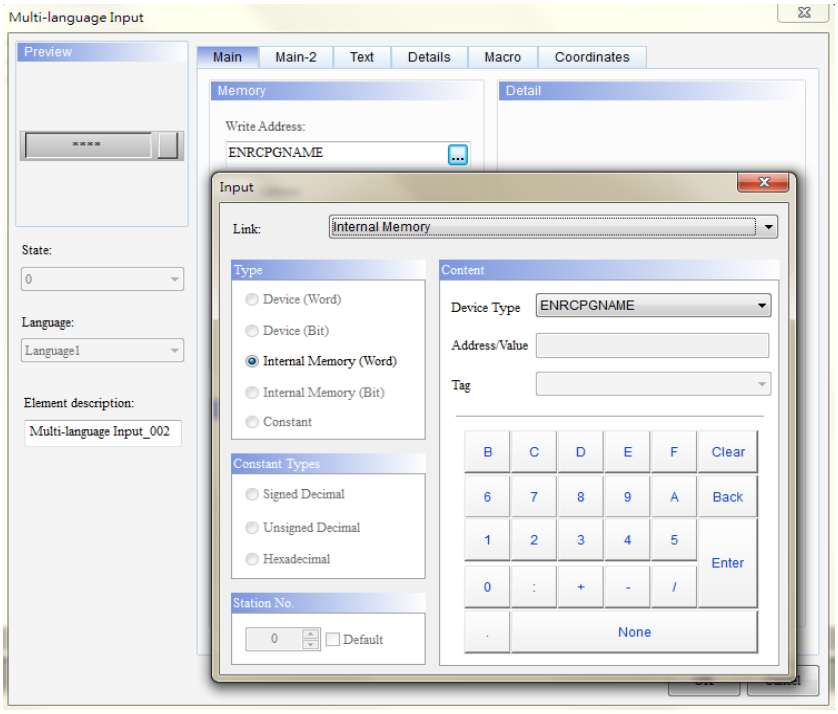
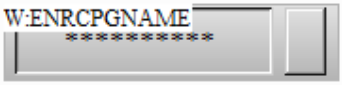


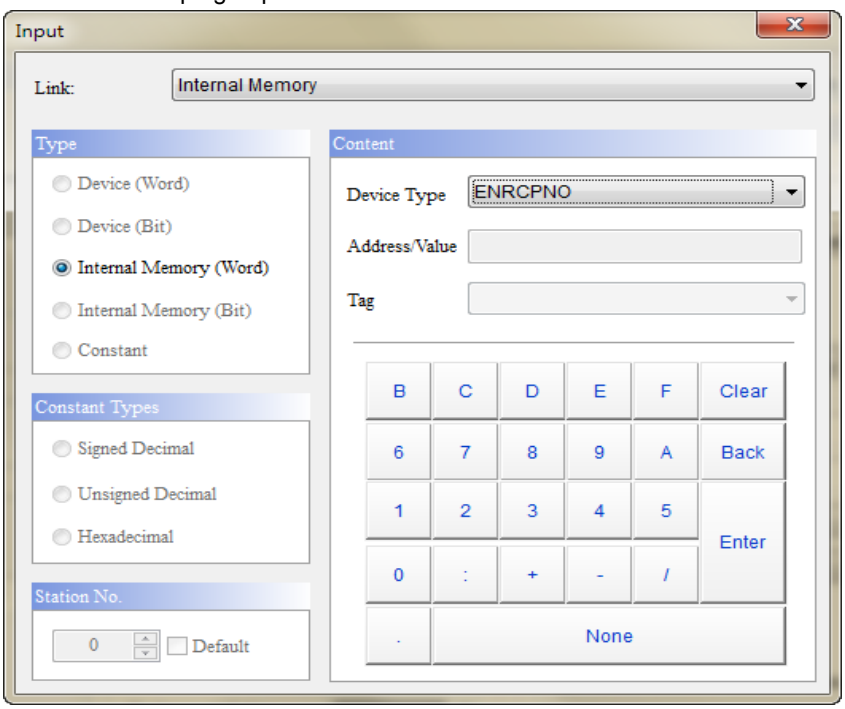
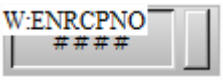
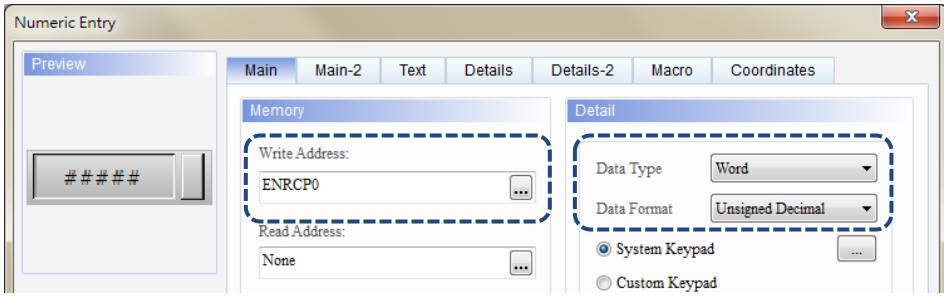
5. Click **Finish**, then enter the recipe data as follows:



6. Repeat steps 1 and 2 to create Field 3 and Group 4 as follows:



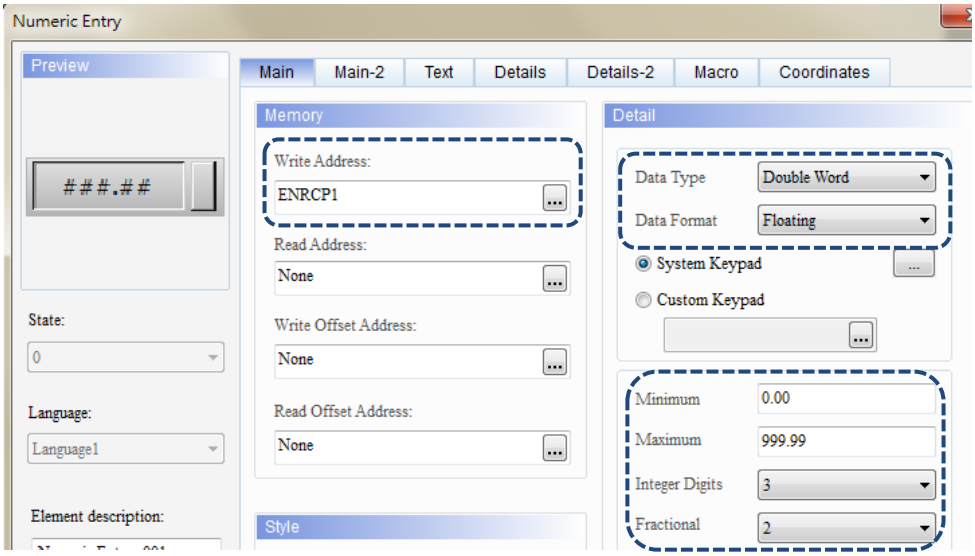
Enhanced Recipe	
Create ENRCPG and ENRCPGNAME	Please refer to the following steps: 1. Create a numeric entry element, set the write address to Internal Memory, and select ENRCPG as the Device Type. This element is mainly used for the selection of enhanced recipe group number.  The following is an example of the created element: ENRCPG 2. Create a Multi-language Input element, set the string length to 10 and write address to Internal Memory, and select ENRCPGNAME as the Device Type. This element is mainly used for inputting the recipe name to select the enhanced recipe group number.  The following is an example of the created element: ENRCPGNAME 

Enhanced Recipe	
Create ENRCPNO	3. Create a Numeric Entry element, set the write address to Internal Memory, and select ENRCPNO as the Device Type. This element is mainly used for the selection of enhanced recipe group.  The following is an example of the created element: ENRCPNO 
Create ENRCP0 - ENRCP11	Before the Numeric Entry element is created to display the enhanced recipe register, you can use the recipe register formula [(L*(G+1)-1)}] to calculate the number that n in ENRCPn represents. Plug the size of the recipe (Length (L) x Group (G) = 3 x 3) into the formula to gain ENRCPn = ENRCP0 - ENRCP11. Please refer to the following steps: 1. Create a Numeric Entry element and set the write address to Internal Memory ENRCP0. Set the way of expression according to field 1 of the recipe table with the data type as Word and data format as Unsigned Decimal. 

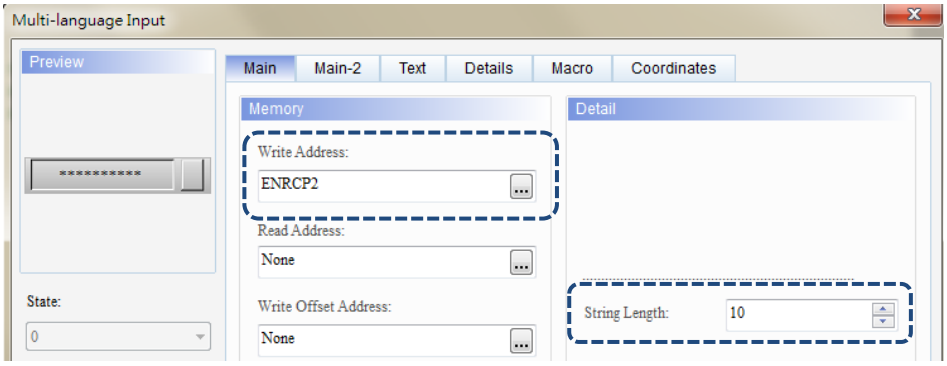
Enhanced Recipe

Create ENRCP0 - ENRCP11

2. Create a Numeric Entry element and set the write address to Internal Memory ENRCP1. Set the way of expression according to field 2 of the recipe table with the data type as Double Word and data format as Floating. Then, set the integer digit to 3 and fractional digit to 2.



3. Create a Multi-language Input element and set the write address to Internal Memory ENRCP2. Set the way of expression according to field 3 of the recipe table and set the string length to 10 (the length of 1 word can store two bits).

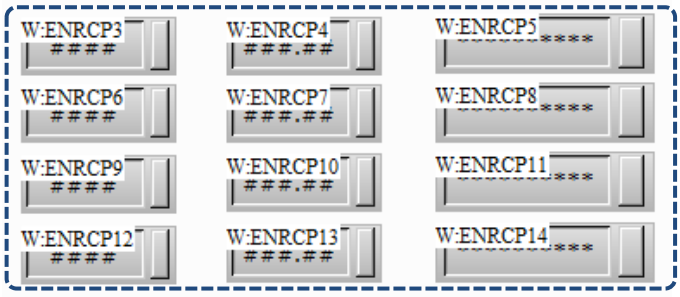


4. Repeat steps 1 - 3 to create the display elements for ENRCP3 - ENRCP11 and set the data format.

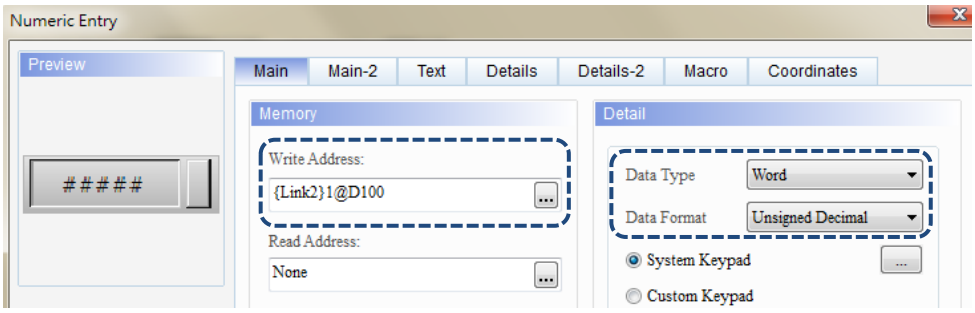
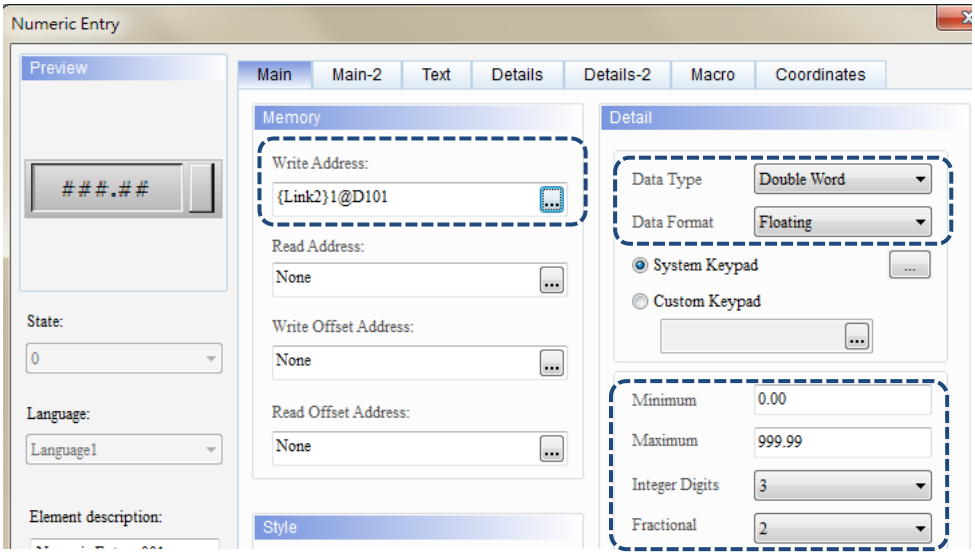
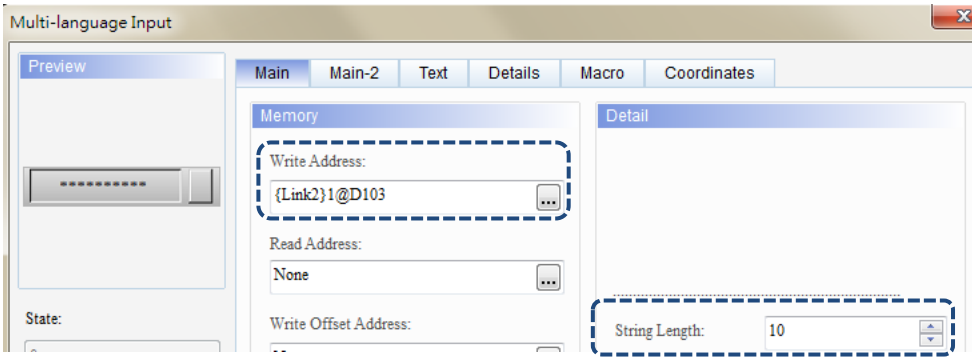
The following is an example of the created elements:

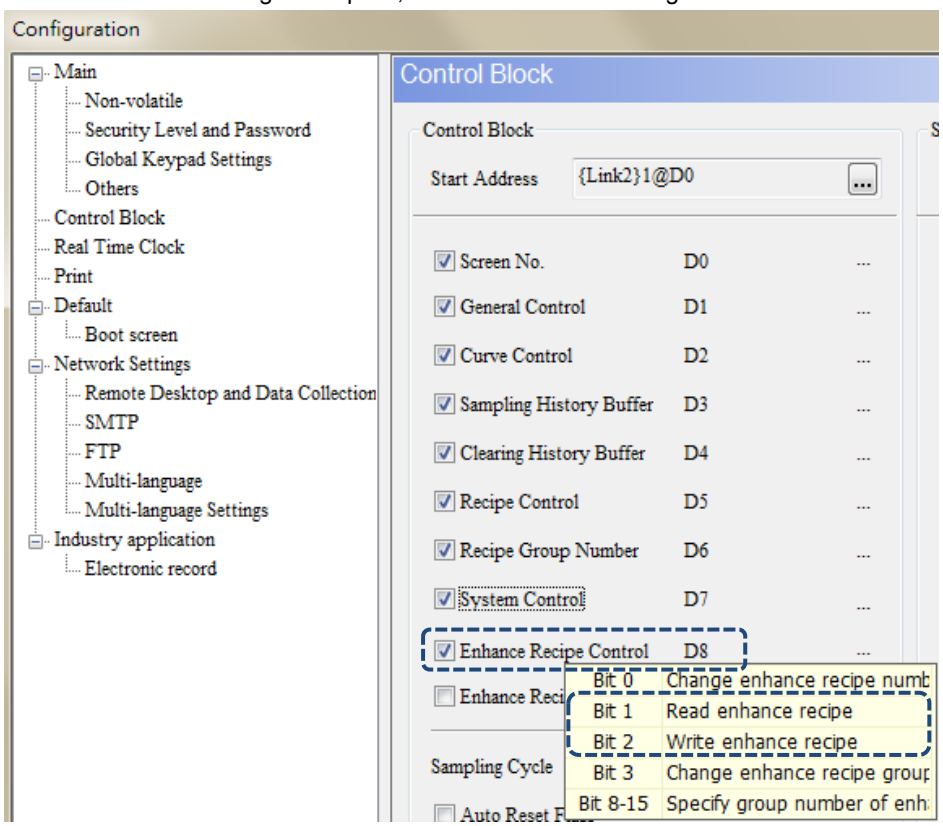
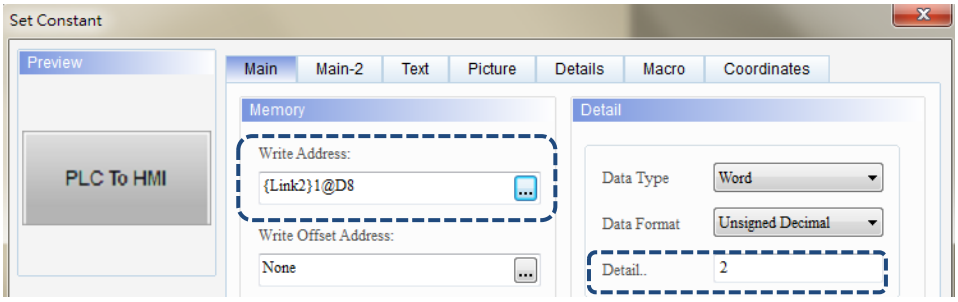
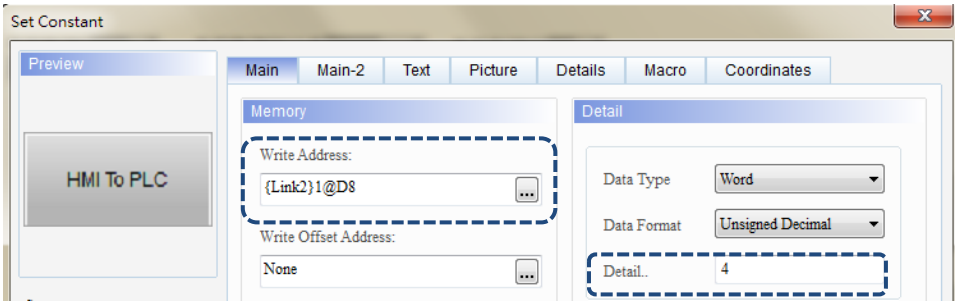
Buffer

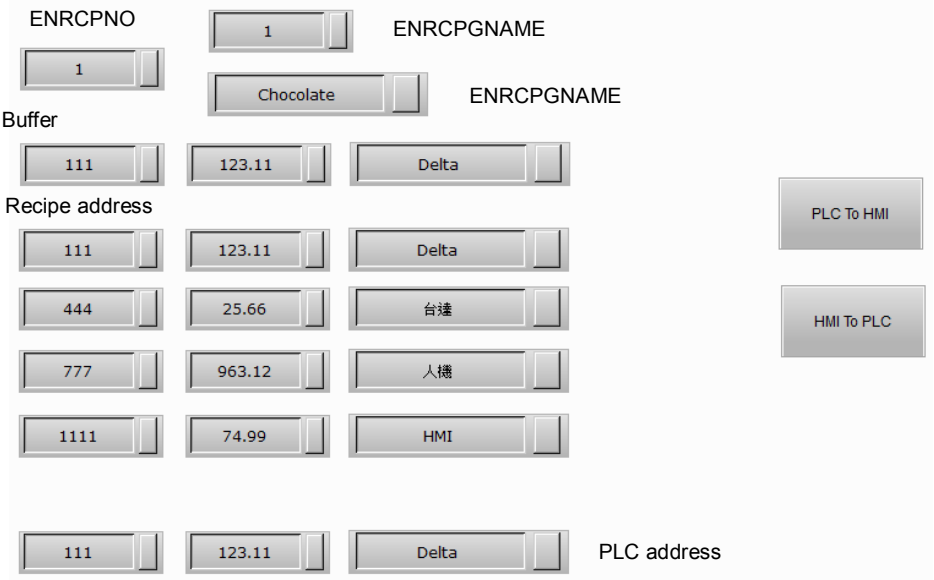
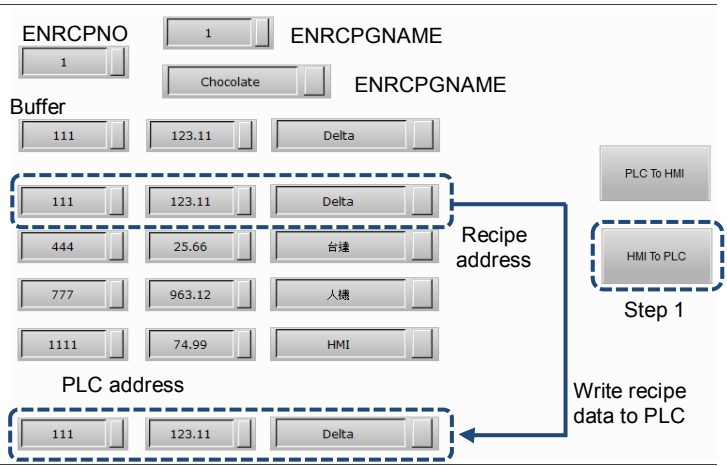
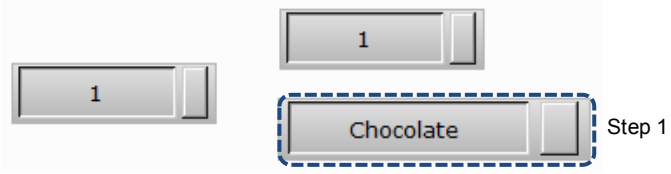
Recipe save address

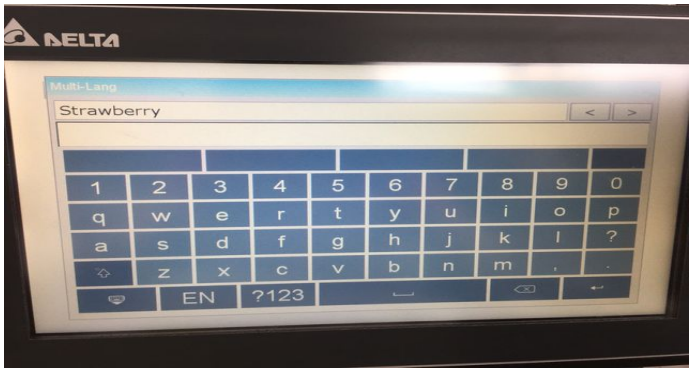
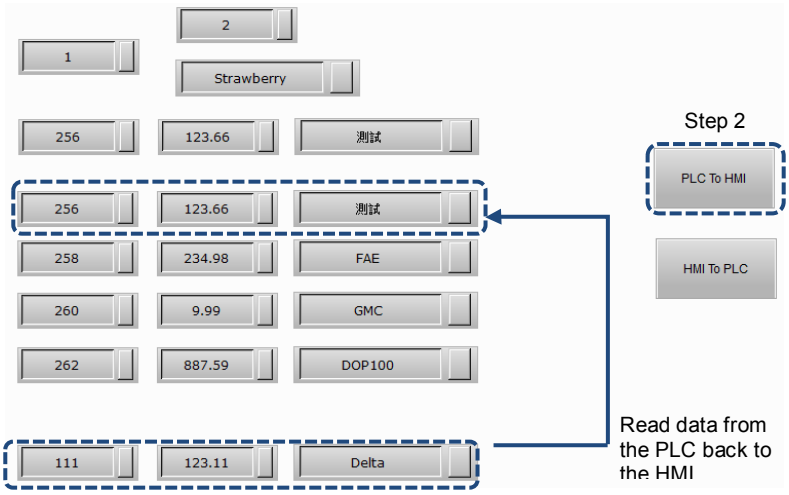
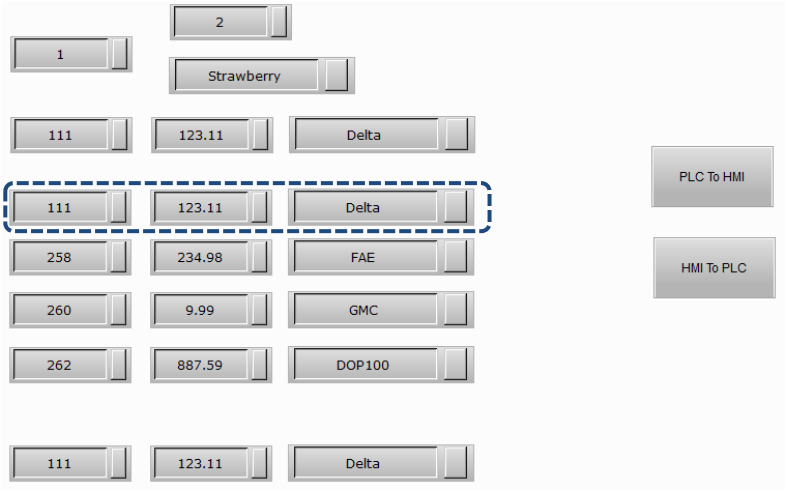


Note: ENRCP0 - ENRCP2 are the buffer areas for the recipe and the actual recipe data is saved in ENRCP3 - ENRCP11.

Enhanced Recipe	
Create recipe PLC address	Please refer to the following steps: 1. Create a Numeric Entry element by referring to the address set for the enhanced recipe to display the data change when reading or writing the PLC recipe. Each field length of the enhanced recipe is not fixed, so you need to set the PLC address based on the recipe table. For example, the first field of this recipe table is in Unsigned Decimal format and its read length is 1. Thus, the read address is set to D100, data type is Word, and data format is Unsigned Decimal.  2. Create a Numeric Entry element and set the write address to D101, data type as Double Word, and data format as Floating. Then, set the integer digit to 3 and fractional digit to 2.  3. Create a Multi-language Input element and set the write address to D103 and string length to 10.  The following is an example of the created elements: PLC address

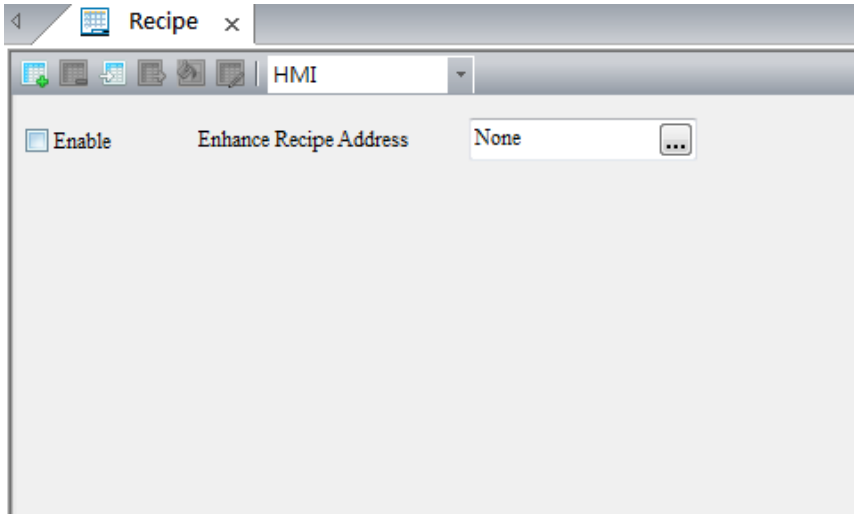
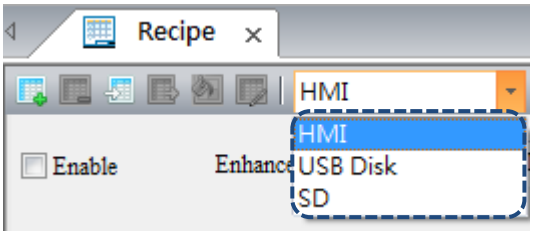
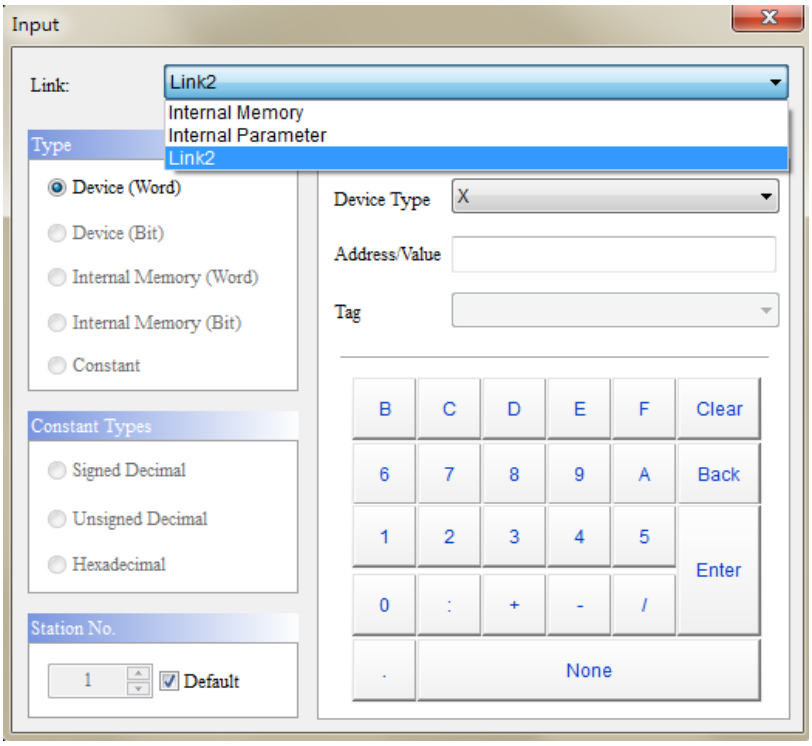
Enhanced Recipe	
Set Recipe Control Flag in Control Block	Go to [Options] > [Configuration] > [Control Block], and check the [Enhance Recipe Control] flag. Then, set the start address for the Control Block to define the Recipe Control Address. Once the setting is complete, click **OK** to exit the Configuration window. 
Create Set Constant button element	Create 2 Set Constant buttons. Set the write address to D8 and the setting value to 2 and 4 corresponding to Bit 1 and Bit 2 of the enhanced recipe control flag D8 respectively for reading and writing the recipe.  

Enhanced Recipe	
Execution results	■ After creating all the elements, please compile and download all data to the HMI. ■ When the enhanced recipe group number is loaded into the HMI, the default value is 1. To display different groups, you can select a different enhanced recipe group number according to the requirement. ■ The recipe data will be displayed in ENRCP0 - ENRCP11 according to the selected recipe group number. The ENRCP0 - ENRCP2 are the recipe buffers and the start address for the first group of recipe data is ENRCP3.  ■ Press the **HMI to PLC** button and the recipe data of the selected enhanced recipe group will be written to the PLC. Press the **PLC to HMI** button and the recipe data of the selected enhanced recipe group that were written to the PLC will be read back to the HMI, and the recipe data of the selected group will be changed.
Write recipe (HMI to PLC)	
Read recipe (PLC to HMI)	■ Press the ENRCPGNAME element. 

Enhanced Recipe		
Execution results	**Read recipe (PLC to HMI)**	■ Enter “Strawberry”, then press .   ■ After executing Step 2, the result is as follows: 

The following section introduces the property settings for the enhanced recipe.

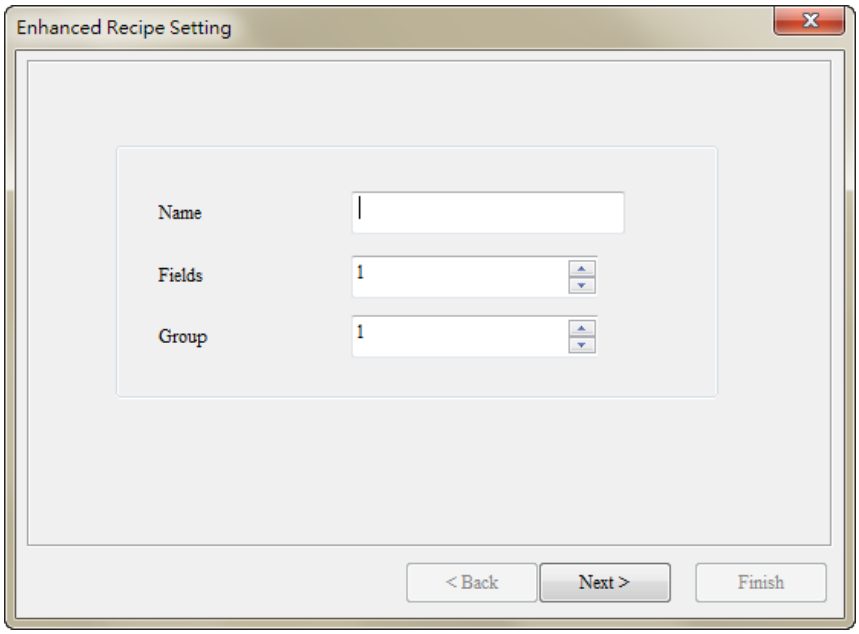
Table 15.2 Properties of the [Enhanced Recipe Setting]

Properties of the [Enhanced Recipe Setting]	
	
Enable	Check [Enable] to use the enhanced recipe. If [Enable] is not checked, all settings for the enhanced recipe will not take effect.
Non-volatile	■ The non-volatile memories include HMI, USB Disk, and SD Card.  ■ The non-volatile memory of DOP-103 and DOP-107 can only be set in the HMI and USB Disk; DOP-110 can be set in the HMI, USB Disk, and SD Card. ■ If you select to save in the HMI, the data is saved in the HMI ROM when power off.
Address	■ You can select the internal memory or the controller register address. ■ Select Link Name or Element Style. ■ Addresses set by the enhanced recipe share one memory address regardless of the group numbers of the recipe. 

Properties of the [Enhanced Recipe Setting]

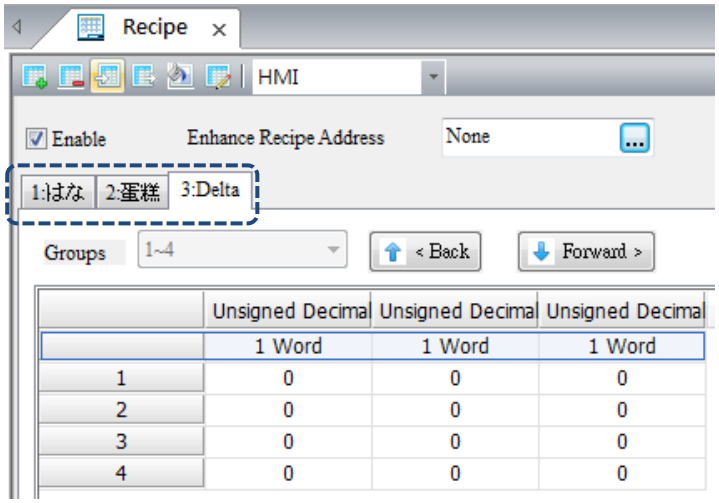
Add recipe

Go to the [Enhanced Recipe] window, click to add enhanced recipe data.
You can add 255 groups of enhanced recipe data.



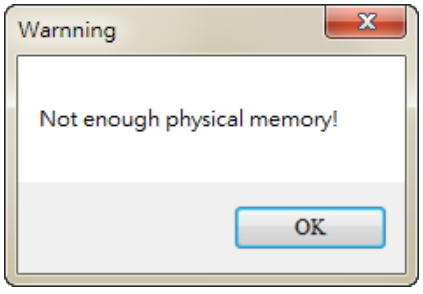
Name

- You can name the enhanced recipe group and the use of Unicode characters is supported.
- With the multi-language input element, you can enter the name of the enhanced recipe to call the recipe.
- The following example shows the first recipe group name in Japanese, the second recipe group name in Chinese, and the third recipe group name in English.



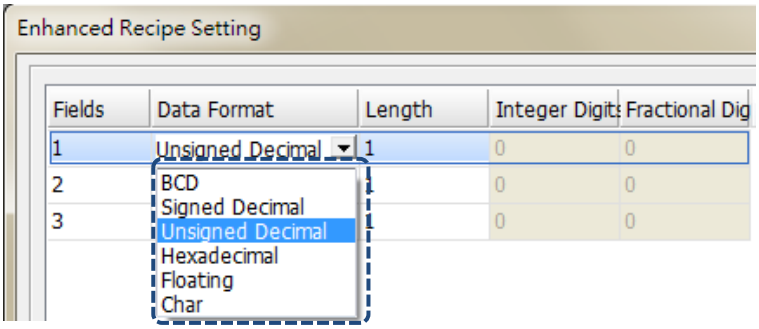
Fields

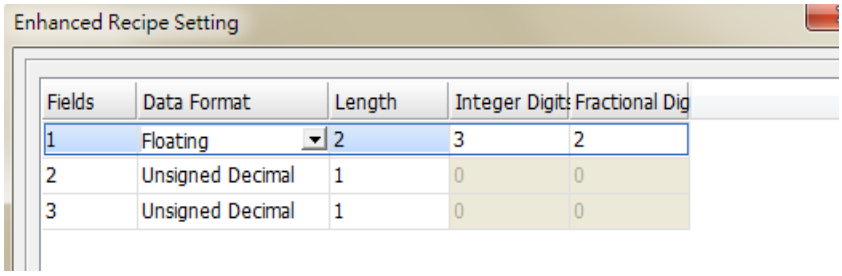
- The [Fields] and [Group] represent the recipe length and group that you entered respectively. The numbers in Fields X Group cannot exceed 256 X 10000.

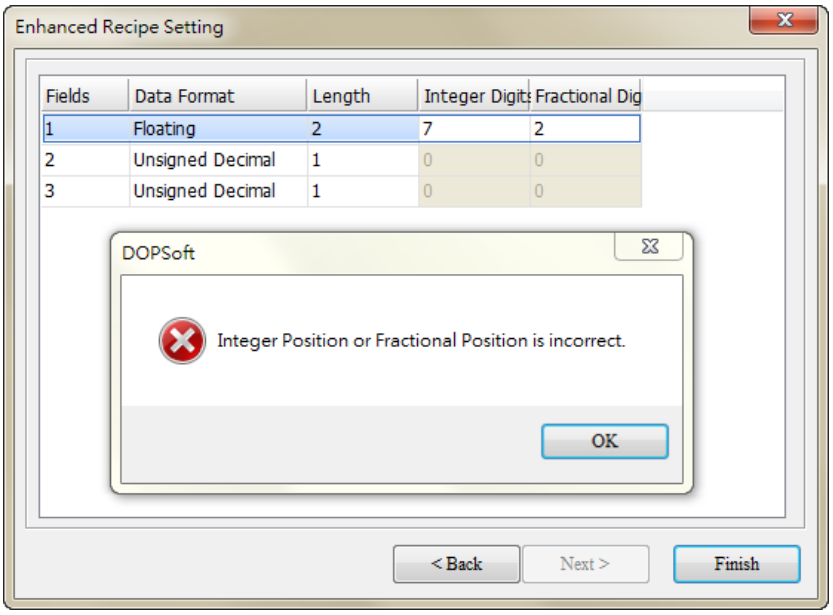
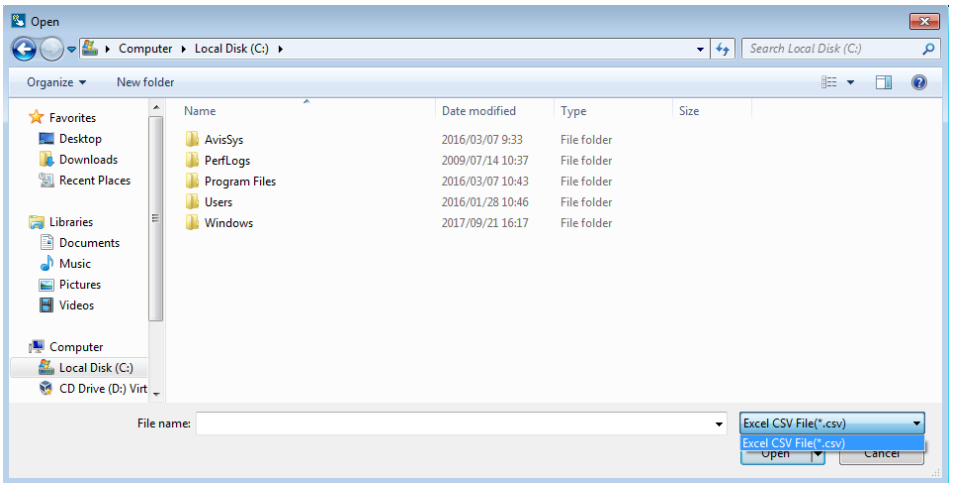
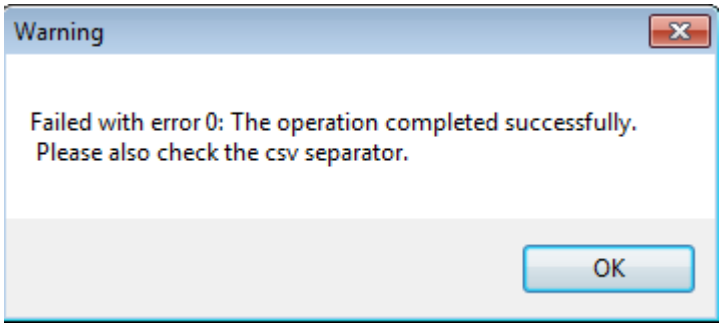


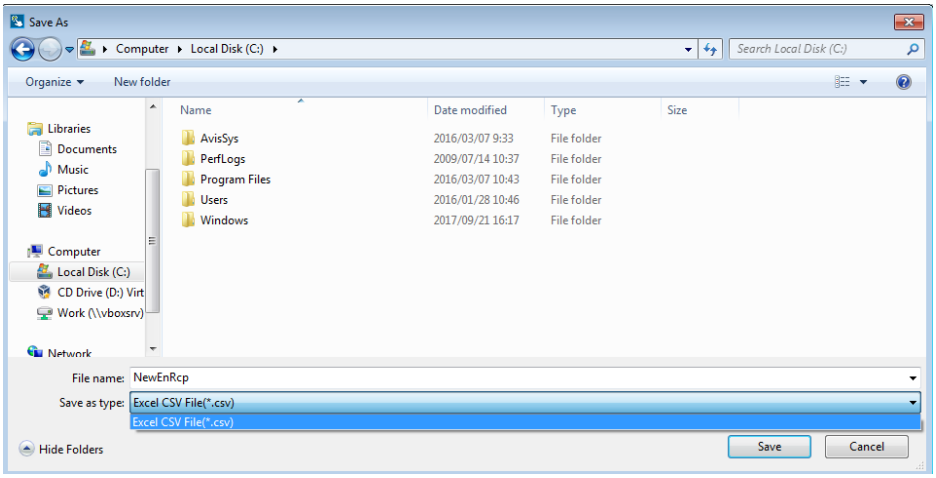
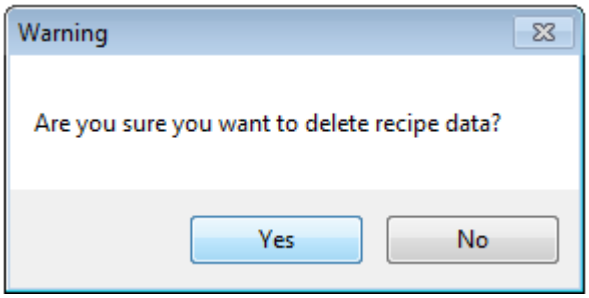
Group

- The numbers in [Fields] and [Group] cannot be 0. If any of the value is 0, the system will automatically set the value to the minimum which is 1.

<table>
<tr><th colspan="3">Properties of the [Enhanced Recipe Setting]</th></tr>
<tr><td rowspan="3">Add recipe </td><td>Data Format</td><td>Data formats include BCD, Signed Decimal, Unsigned Decimal, Hexadecimal, Floating, and Char.
 

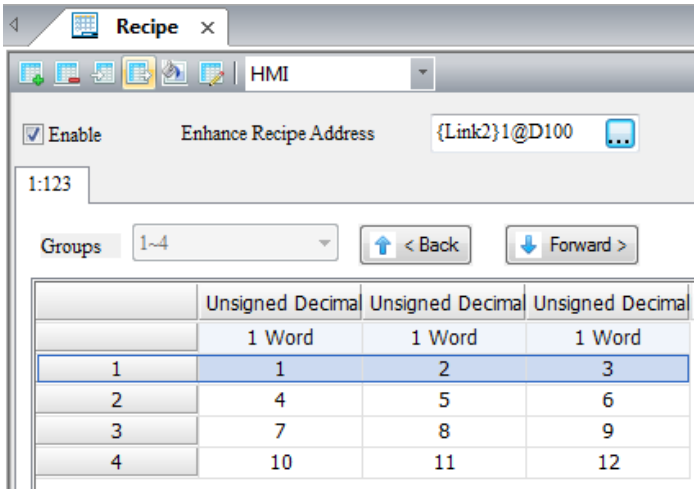
Note: if you select Char as the data format, please do not use the same character for the input value and delimiter. Otherwise, it may cause data error and failure to import the data.</td></tr>
<tr><td>Length</td><td>Limit of the read length varies according to different data formats.
<table>
<tr><th>Data Format</th><th>Length</th><th>Note</th></tr>
<tr><td>BCD</td><td>1 or 2</td><td rowspan="4">1: Word
2: Double Word</td></tr>
<tr><td>Signed Decimal</td><td>1 or 2</td></tr>
<tr><td>Unsigned Decimal</td><td>1 or 2</td></tr>
<tr><td>Hexadecimal</td><td>1 or 2</td></tr>
<tr><td>Floating</td><td>2</td><td>2: Double Word</td></tr>
<tr><td>Char</td><td>1 - 32</td><td>Supports up to 32 Words
(64 bits)</td></tr>
</table>
Note: if you select Char as the data format, the system automatically fills in the blank string if there is any remaining space after you entered the characters.</td></tr>
<tr><td>Integer Digits</td><td>You can only set the integer and fractional digits when the data format is floating.
 
</td></tr>
</table>

Properties of the [Enhanced Recipe Setting]		
Add recipe	Fractional Digits	When the data format is floating, the integer and fractional digits support only 7 digits in total. When exceeding this limit, a warning message pops up. 
Import Recipe	■ The [Import Recipe] function only supports CSV file format for you to select and import the recipe.  ■ The opened and imported recipe file provides the recipe data content only and the recipe address does not support loading the 16- or 32-bit set address. If you use the enhanced recipe to open the CSV file of the 16- or 32-bit recipe, the recipe data is unable to display and an error message will pop up. 

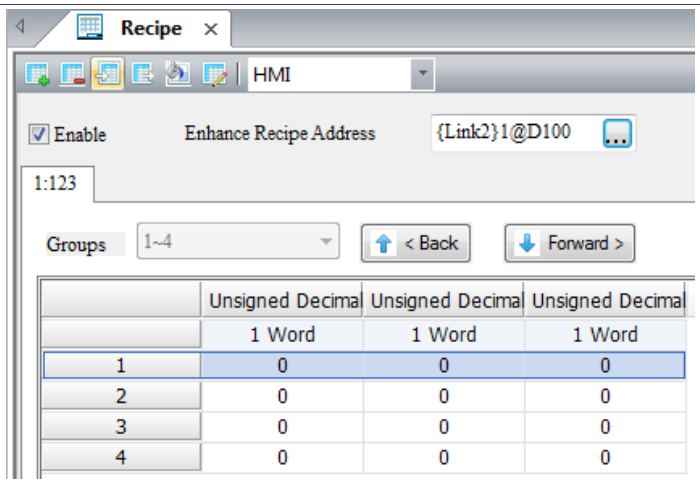
Properties of the [Enhanced Recipe Setting]	
Export Recipe	The [Export Recipe] function saves the current enhanced recipe. The supported file format is the same as [Open], which is CSV only. 
Delete Recipe	The [Delete Recipe] function deletes the enhanced recipe data. When executing this function, a warning message will pop up asking if you are sure that you want to delete the data. 

Properties of the [Enhanced Recipe Setting]	
Clear Configuration	Clear the recipe content that has the value entered.

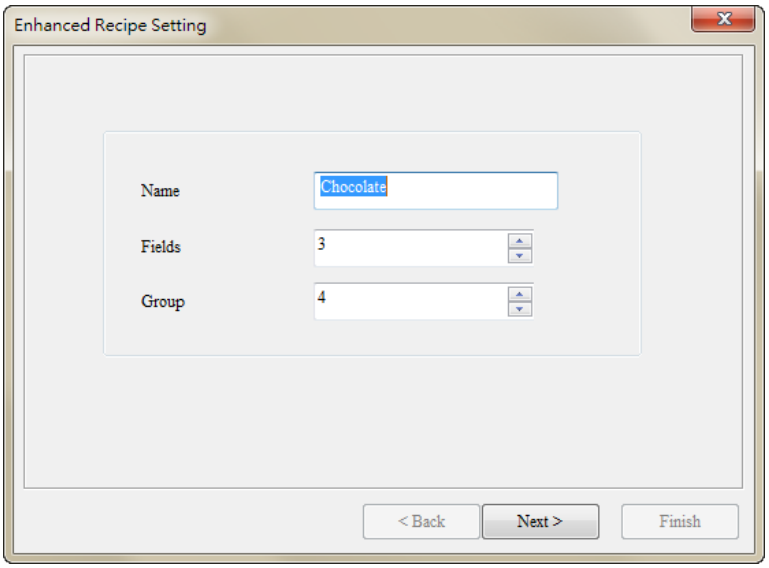
Before clearing

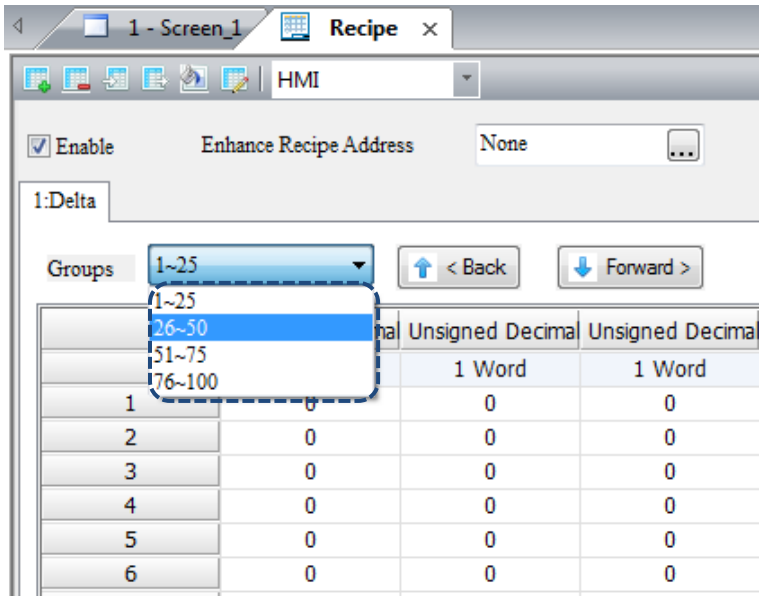
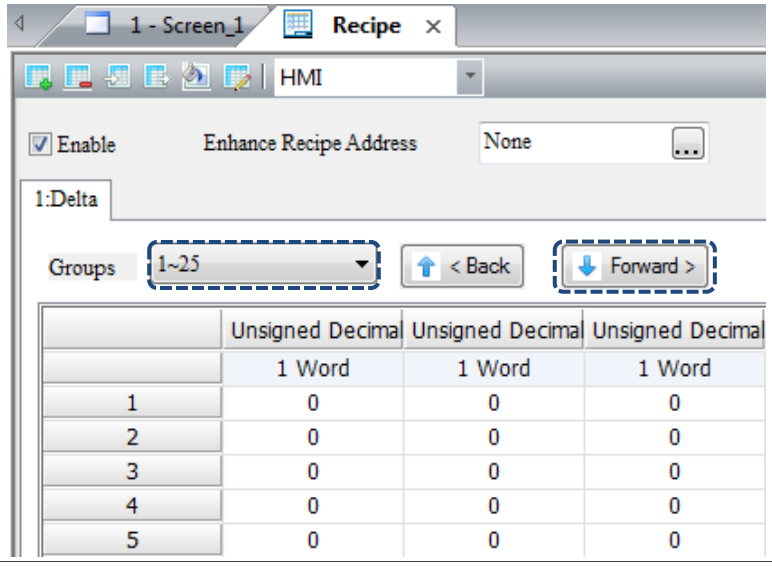
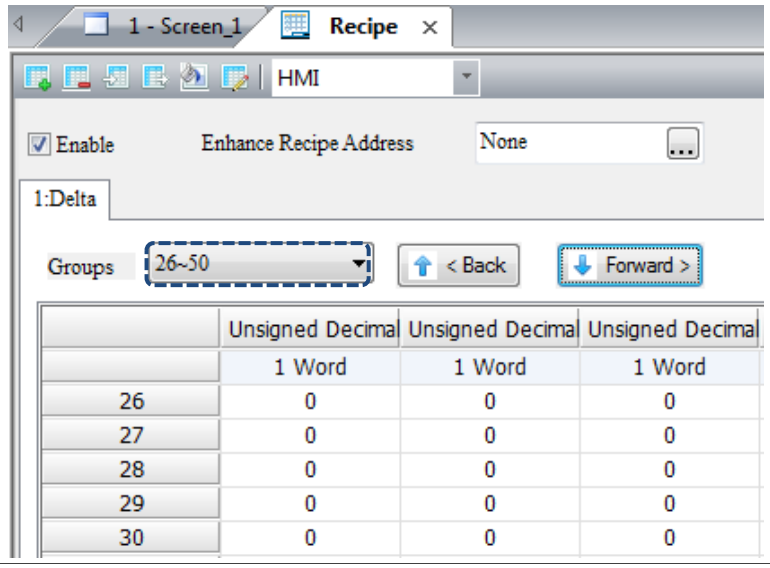


After clearing



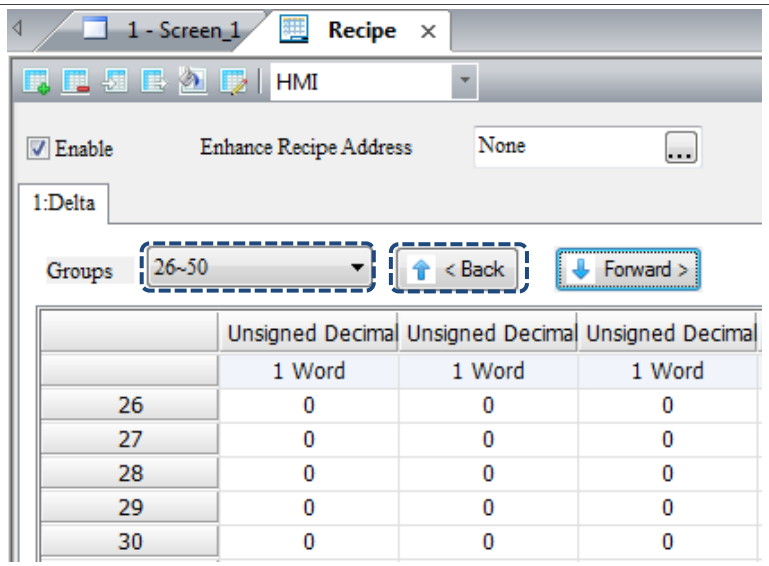
Enhanced Recipe Setting	The settings of the [Enhanced Recipe Setting] take effect only when there is recipe data in the enhanced recipe. You can use this function to change the name, field, group, and data format of the recipe.



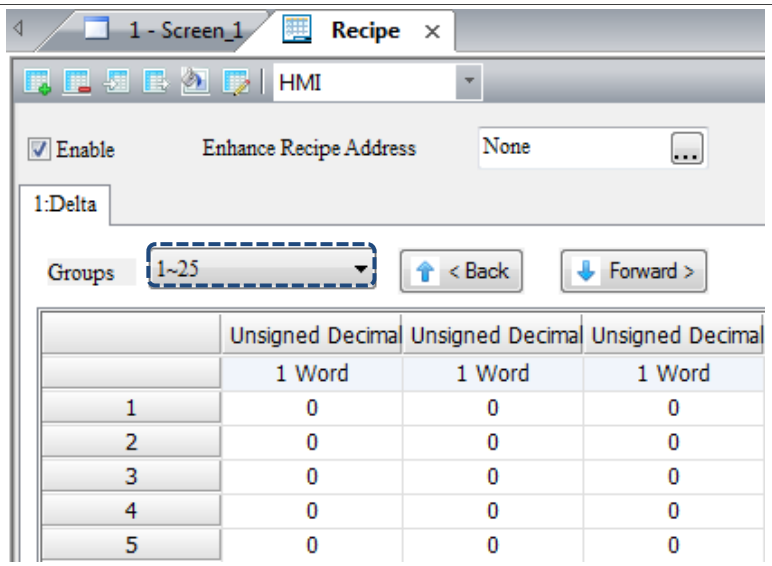
Properties of the [Enhanced Recipe Setting]	
Groups	The recipe table displays up to 25 groups of recipe data on one page. This function allows you to quickly and easily select the recipe group that you want to view. 
Forward >	The recipe table displays up to 25 groups of recipe data on one page and when you press the [Forward] button, you can quickly view the next 25 groups of recipe data. Before  After 

Properties of the [Enhanced Recipe Setting]	
< Back	The recipe table displays up to 25 groups of recipe data on one page and when you press the [Back] button, you can quickly view the previous 25 groups of recipe data.

Before



After



16. Macro

DOP-100 provides three new macro commands as follows:

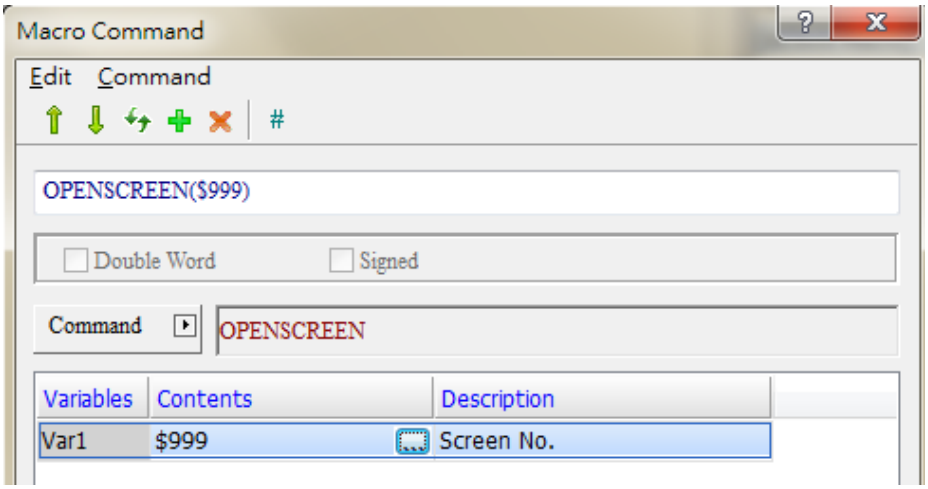
■ OPENSCREEN (open screen)

Expression	Meaning of variable		Note
OPENSCREEN(Var1) (W)	Var 1	Screen No.	W: Word
	Description of action		
	Open the screen number specified by Var 1.		

Variable	Type		
	Internal memory	PLC register	Constant
Var 1	v	v	v

Example

Var 1 is the internal memory. When $999 = 2, switch the screen to screen No. 2.



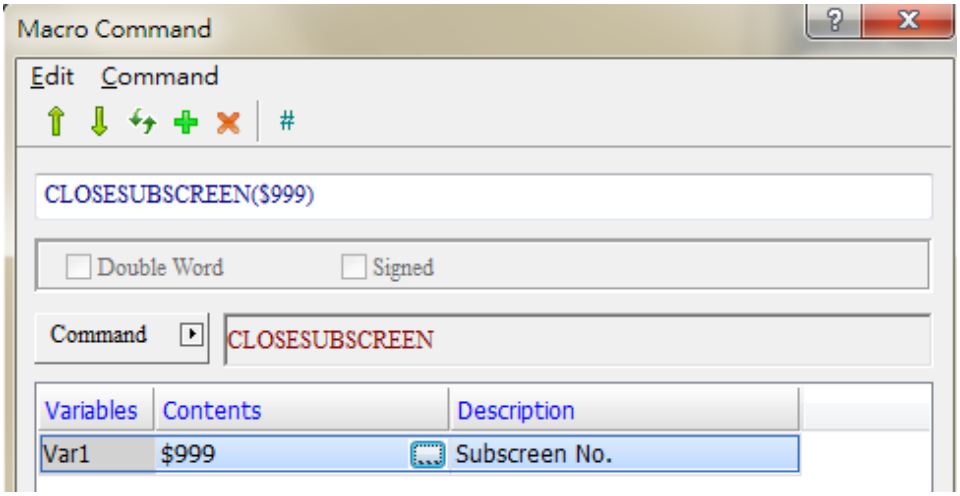
■ CLOSESUBSCREEN (close sub-screen)

Expression	Meaning of variable		Note
CLOSESUBSCREEN(Var1) (W)	Var 1	Sub-screen No.	W: Word
	Description of action		
	Close the sub-screen number specified by Var 1.		

Variables	Type		
	Internal memory	PLC register	Constant
Var 1	v	v	v

Example

Var 1 is the internal memory. When $999 = 2, close sub-screen No. 2.



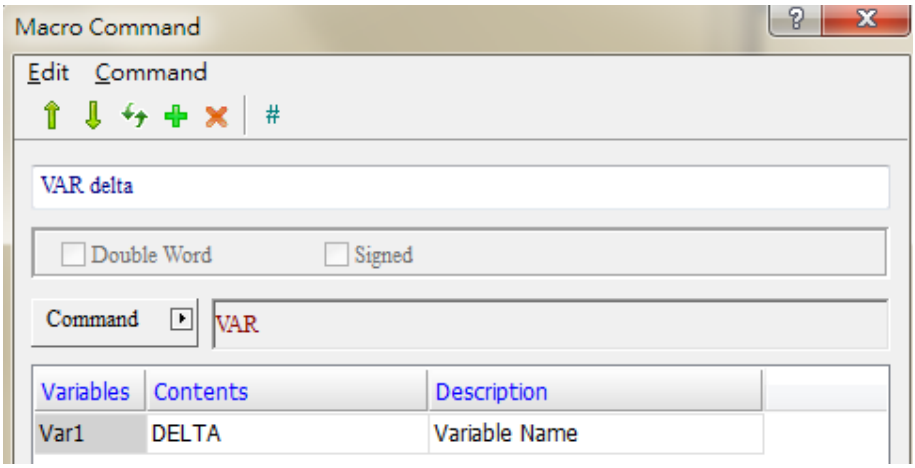
■ VAR (variable)

Expression	Meaning of variable		Note
VAR Var1 (W)	Var 1	Variable name	W: Word
	Description of action		
	Specify a name as the global variable.		

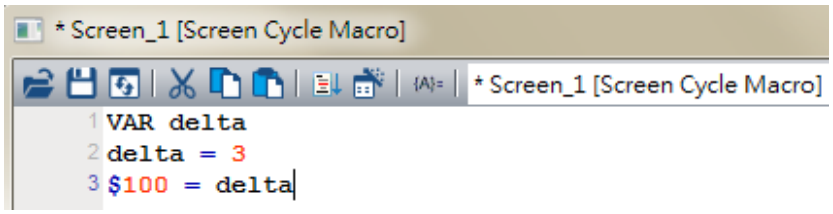
Variables	Type			
	Internal memory	PLC register	String	Constant
Var 1			v	

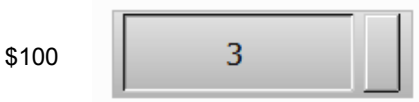
Example

Var 1 is the string. Declare delta as the variable.



Assign value 3 to delta, then move the delta value to $100 and execute $100 = 3.





17. Multi-language Input

The multi-language input function supports up to 16 languages and you can decide the input methods for editing the display texts.

Go to [Options] > [Configuration] > [Multi-language Settings] to check the preferred languages. Then, with the [Multi-language Input] element in the [Entry Element], you can use the multi-language input function.

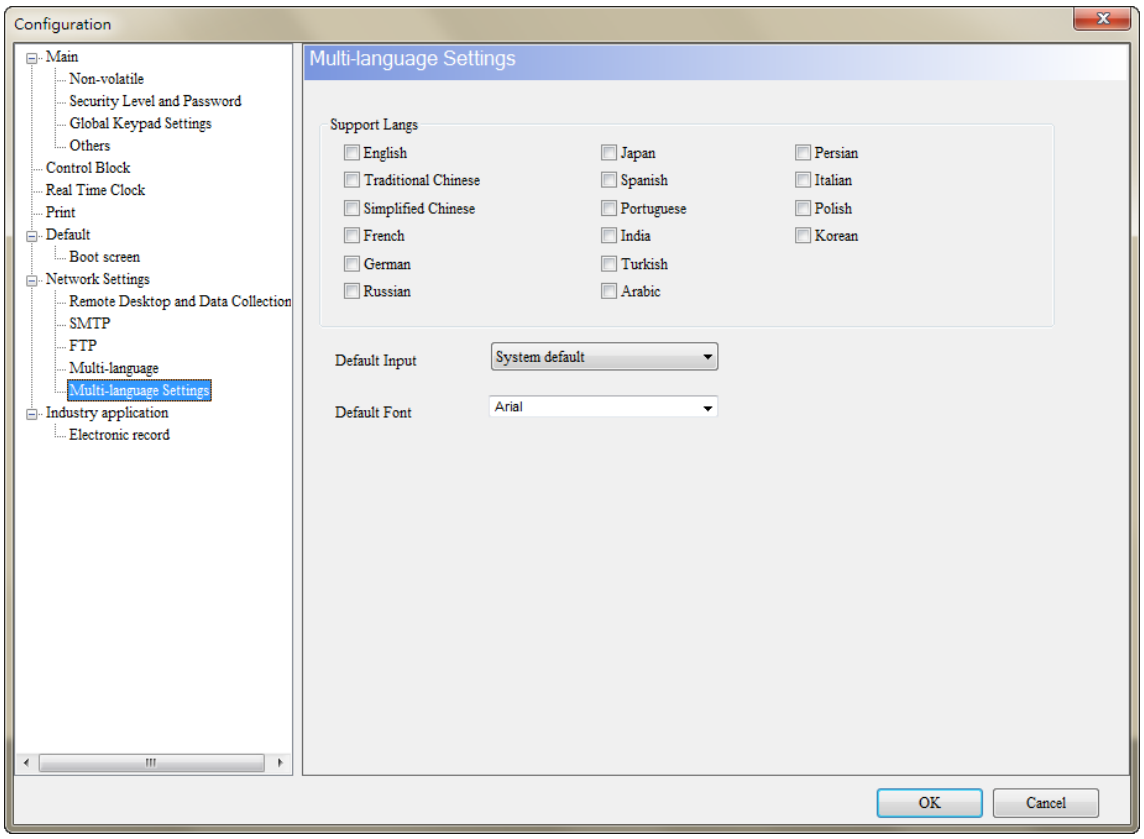


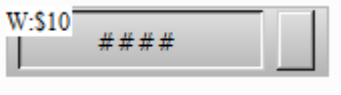
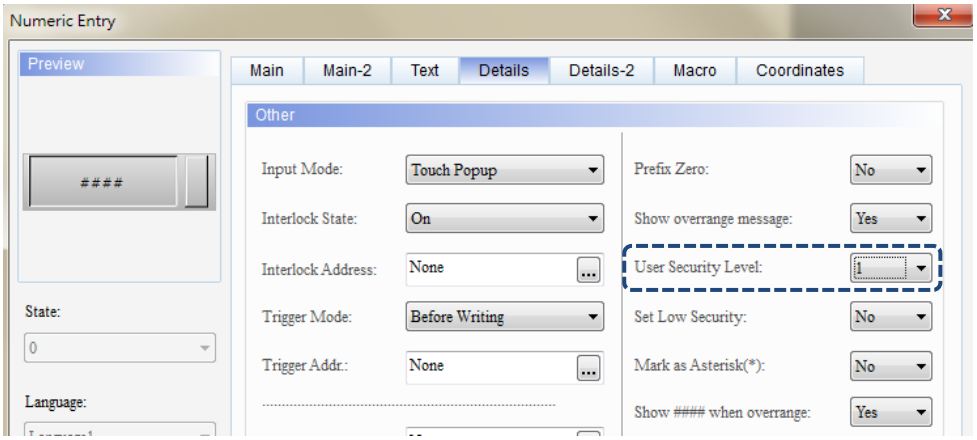
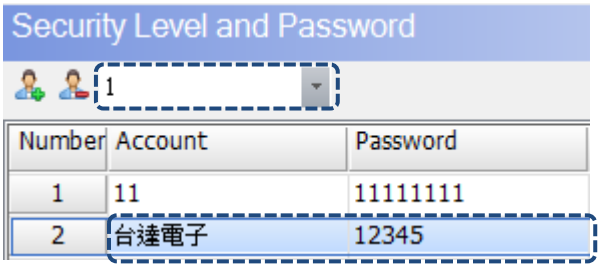
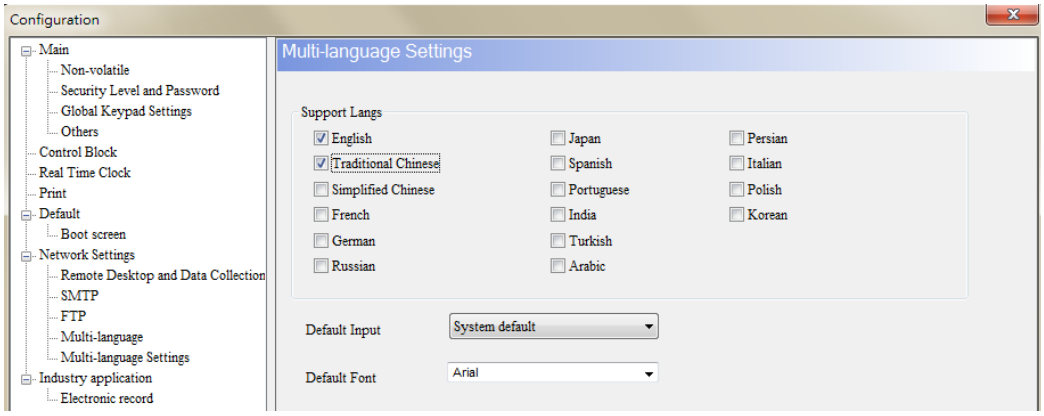
Figure 17.1 Multi-language Input

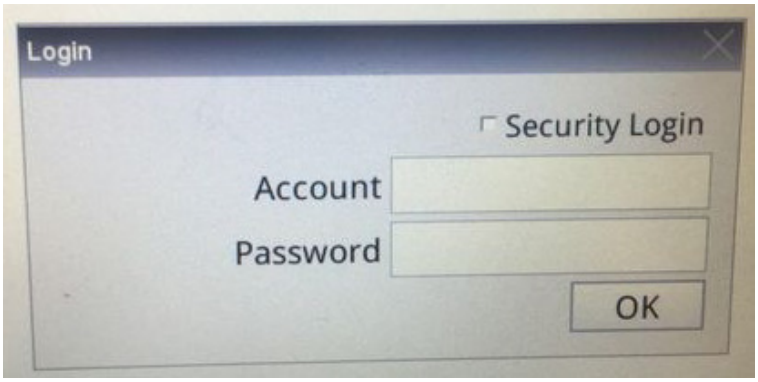
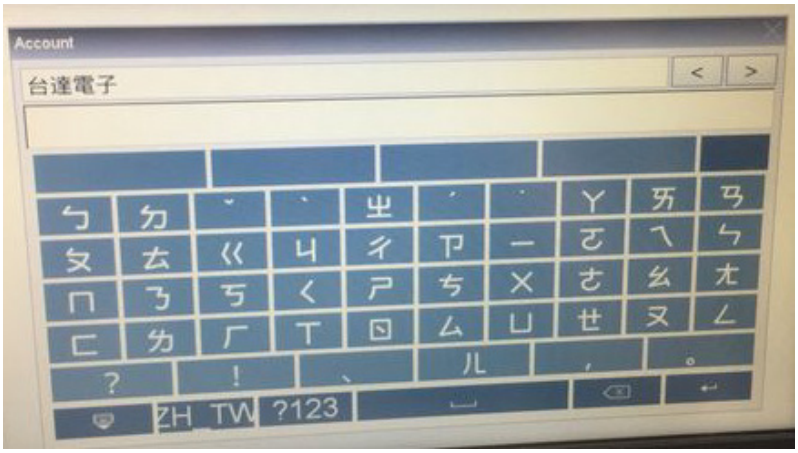
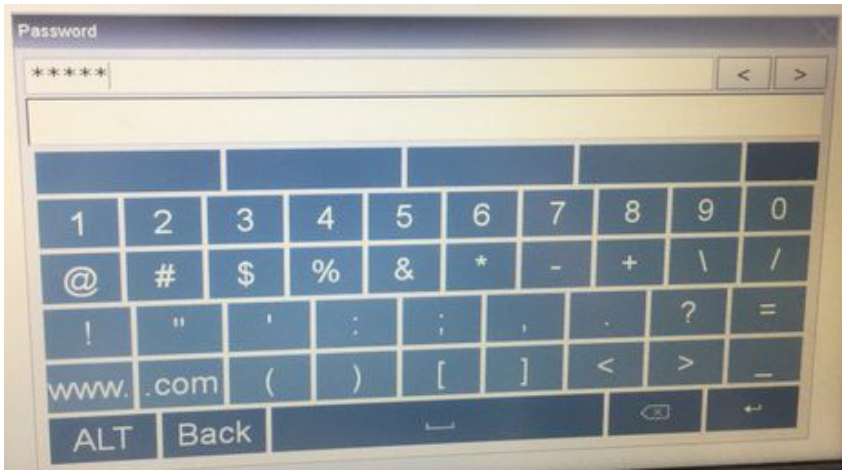
The Multi-language Input element provides functions different from DOP-W, which combines enhanced recipe group naming, enhanced recipe Char format, account input, so that you can input Unicode characters for the names and content.

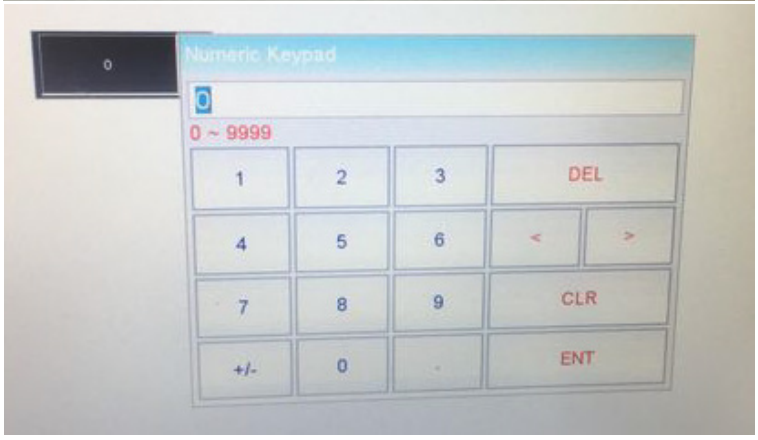
Note: the Multi-language Input function does not support online and offline simulations.

Please refer to Table 17.1 for the Multi-language Input example.

Table 17.1 [Multi-language Input] example

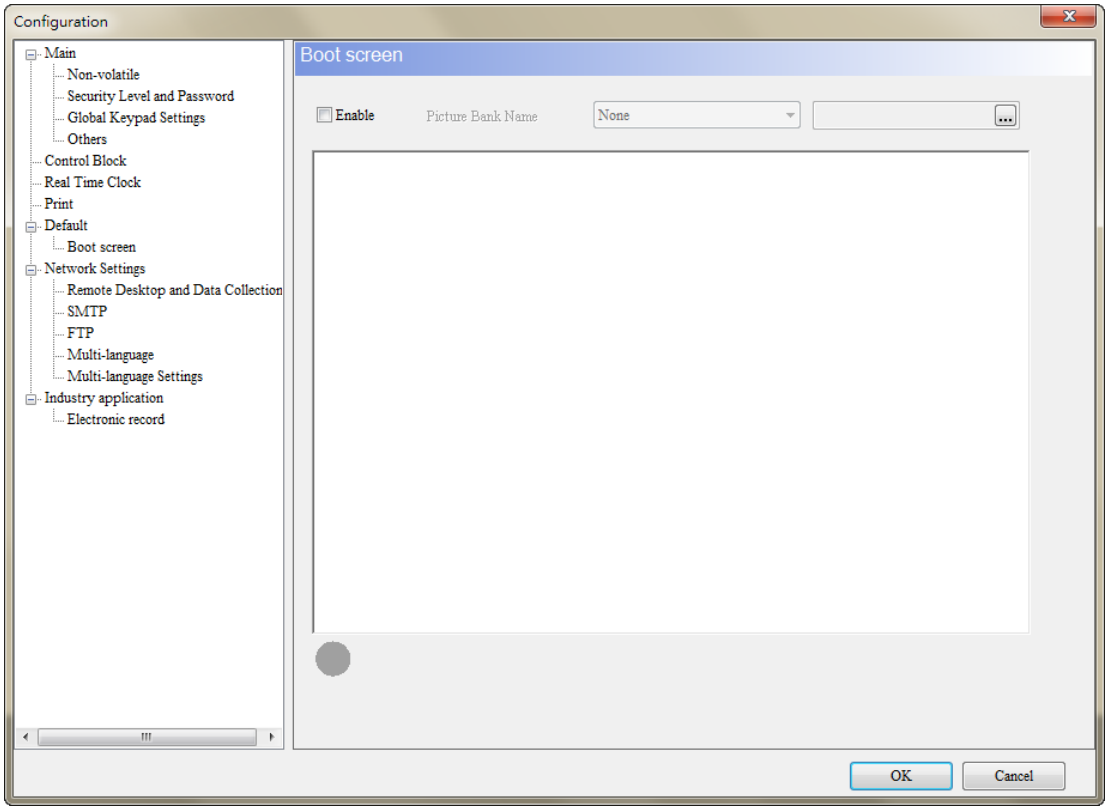
Multi-language Input	
Write Address	■ Create a Numeric Entry element and set the write address to $10.  ■ Set the [User Security Level] to 1. 
Setting	■ Go to [Options] > [Configuration] > [Security Level and Password] to create a level 1 account as the following.  ■ Go to [Options] > [Configuration] > [Multi-language Settings] to check [English] and [Traditional Chinese] as the following. 

Multi-language Input	
Execution results	■ After creating the element, please compile and download the element to the HMI. ■ Press the Numeric Entry element and the screen will display the following input window.  ■ Press [Account] and the multi-language input window will pop up. You can press EN to switch to other selected languages.  ■ Press ?123 to switch to the numeric keyboard and input 12345 as the password. 

Multi-language Input	
Execution results	■ Press **OK** to use the Numeric Entry element. 

18. Animated Boot Screen

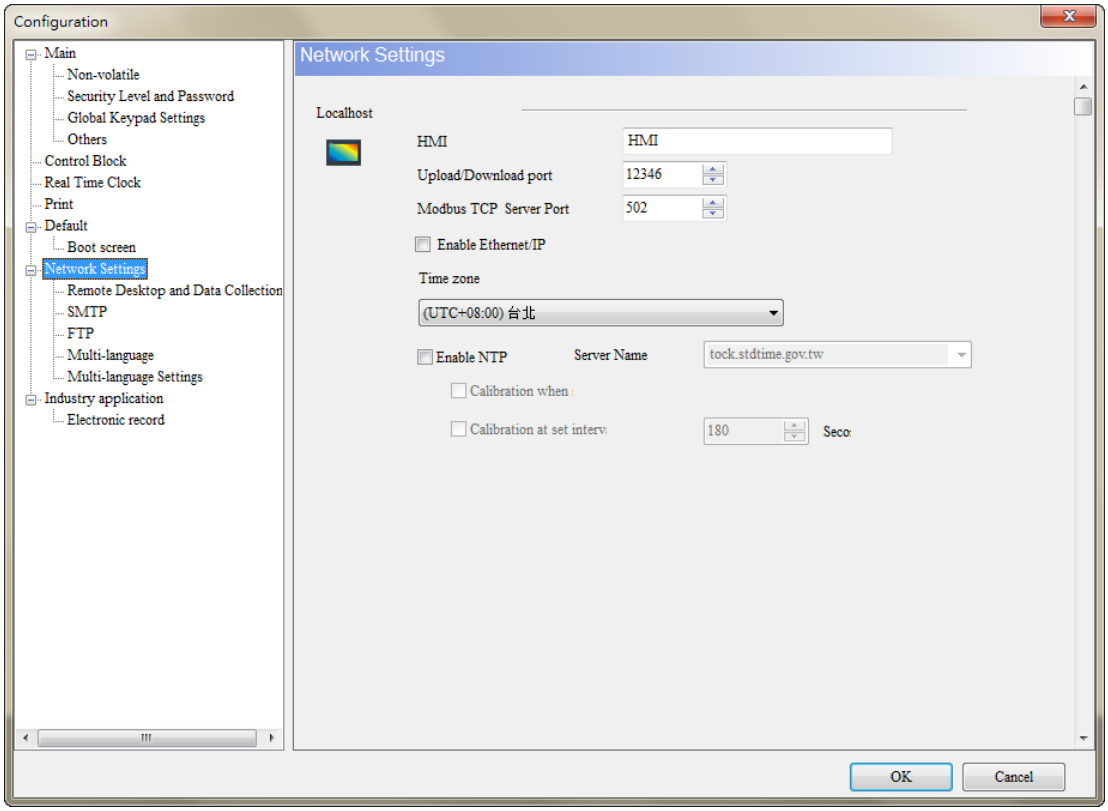
Table 18.1 Configuration - Boot screen

[Configuration] - [Default]	
	
Enable	■ After you check [Enable], you may select the boot screen from the picture bank. ■ To use files not in the picture bank, you can import the image files into the picture bank. ■ If you select a GIF image file and the gray circle below appears as , it indicates that the GIF preview is available on the software. ■ When the [Boot screen] is enabled, you can replace the HMI boot screen from [Tools] > [Download Boot Screen]. Or you can use [Download All Data] to download the boot screen. Note: 1. After downloading the boot screen, please cycle power on the HMI. 2. Supported image file formats include BMP, JPG, GIF, ICO, and PNG. 3. The HMI animated boot screen playing time for GIF image files is 3 seconds.

19. NTP

Table 19.1 Configuration - Network Settings

[Configuration] - [Network Settings]

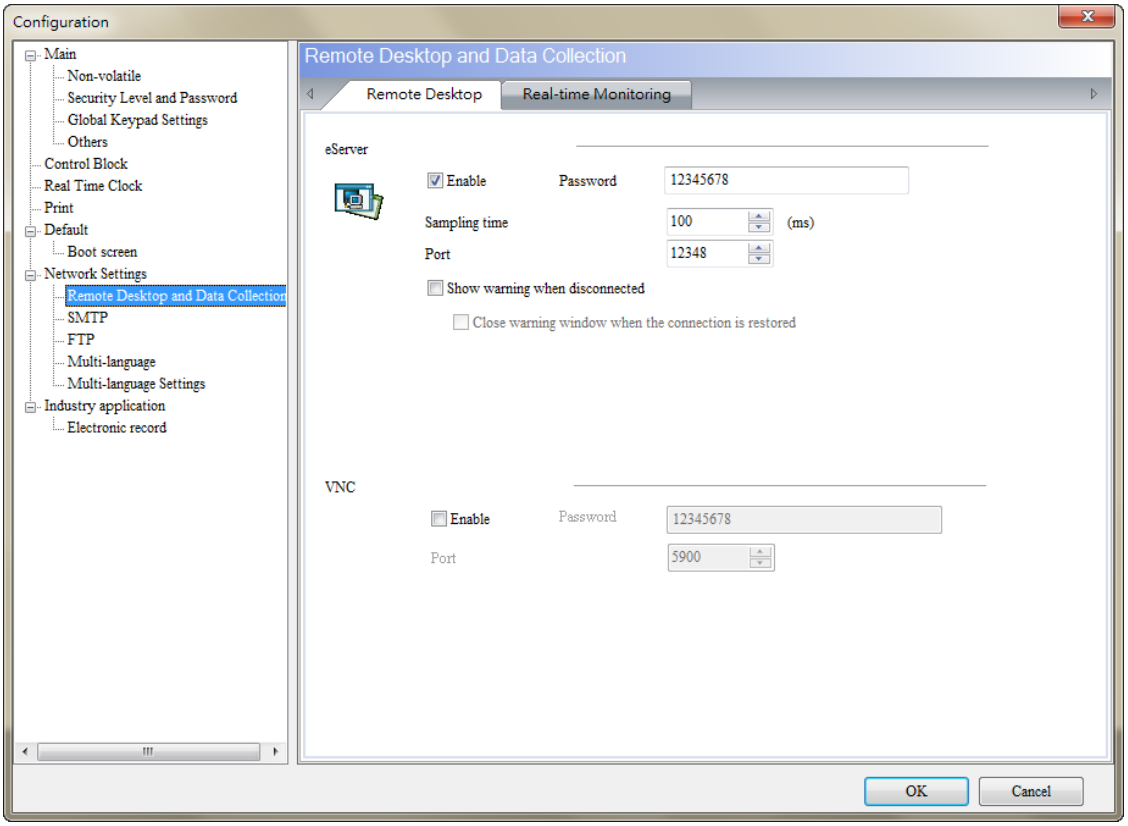


NTP	Enable NTP	When you check [Enable NTP], the HMI can correct its time according to the network time. If you enable NTP, please make sure the HMI network is smooth.
	Server Name	You can select the server provided by the software or enter a local NTP server name.
	Calibration when startup	When you check [Calibration when startup], the HMI correct its time when booting.
	Calibration at set intervals	After you check [Calibration at set intervals], set the seconds. This setting is the timing of the correction after the HMI starts. The default is 180 seconds (minimum is 10 seconds and maximum is 99,999 seconds).

20. Network application

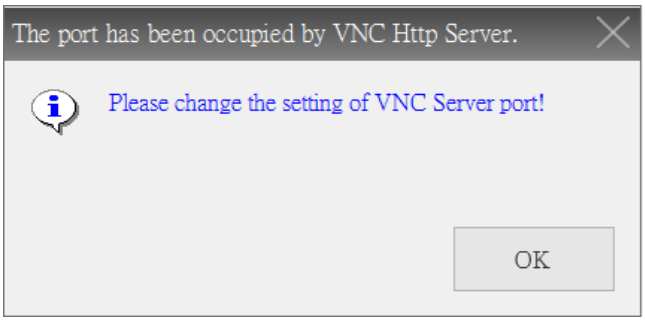
Table 20.1 Configuration - Remote Desktop and Data Collection

[Configuration] - [Network Settings]
Remote Desktop



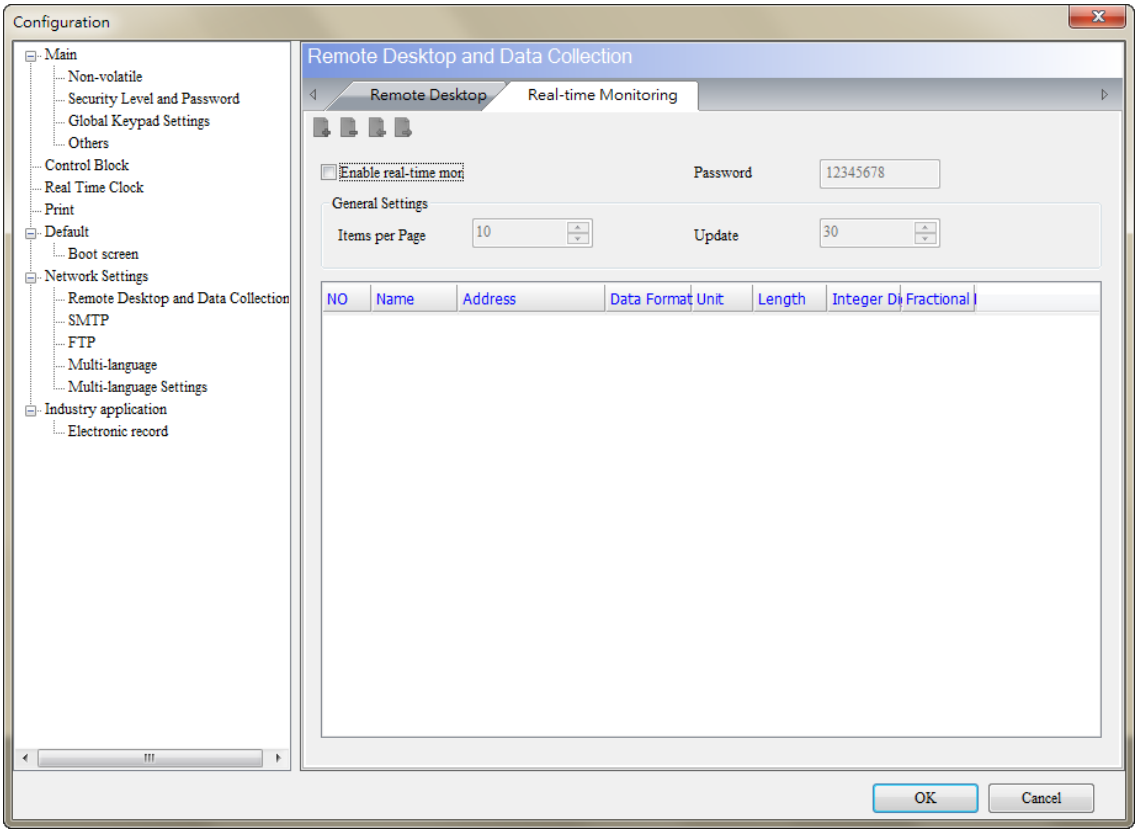
VNC

- VNC (Virtual Network Computing) is a software that can remotely monitor and operate the HMI. This software sends the keyboard and mouse actions and real-time screens through the network.
- When using the web page to operate VNC, the browser must support Java installation, otherwise it cannot be opened. The recommended Java version is 1.7.0_45 or below.

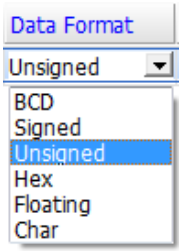
Enable	Check [Enable] to remotely monitor and operate the HMI by VNC.
Password	You can change the password. The default password is 12345678.
Port	■ The default port is 5900. If you set the software connection port to 5902, you need to change the connection port to 5902 as well when connecting with the VNC Viewer. ■ Please do not use 5800 when setting the software connection port. If you set 5800, the following message will appear to remind you to change the connection port after you download the screen to the HMI.  ■ With the VNC Viewer web operation, all you need to do is enter the HMI IP Address in the browser, set the port to 5800, then you can open the connection. If the software connection port default is not 5900, please enter 5800 for the connection port when operating with the browser. For example http://192.168.123.148:5800.

[Configuration] - [Network Settings]

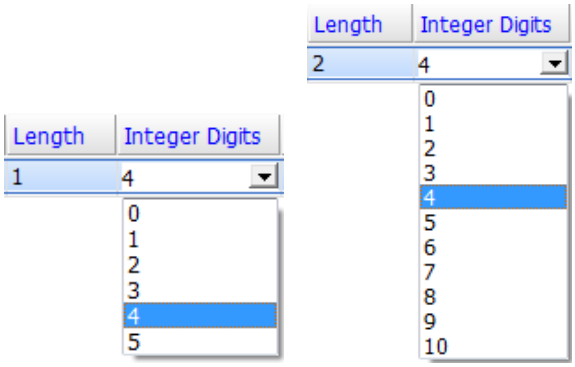
Real-time Monitoring



- Network real-time monitoring allows you to write values from the web page to the HMI; or when you write values to the HMI, you can monitor the values from the web page.
- The real-time monitoring interface provides multiple data formats. Supported data formats include BCD, Signed, Unsigned, Hex, Floating, and Char.



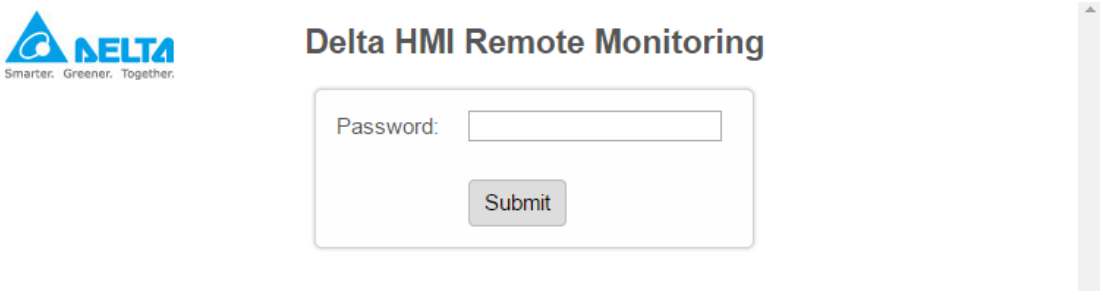
- You can set the read length of each data format to determine whether to read Word or Double Word. When the read length is 1, the integer can be set up to 5 digits, meaning the data format is Word; when the read length is 2, the integer can be set up to 10 digits, meaning the data format is Double Word.



- Word and Bit are provided for the address input, and supports internal memory address and external PLC address.

[Configuration] - [Network Settings]

■ How to set up network real-time monitoring? Check [Enable real-time monitoring] and set the address. Enter **http://[HMI IP]/RemoteMon/** on the browser. Then, you can see the following login screen. Enter the network application password to log in. Capitalize R and M, otherwise you cannot connect to the HMI through the web.

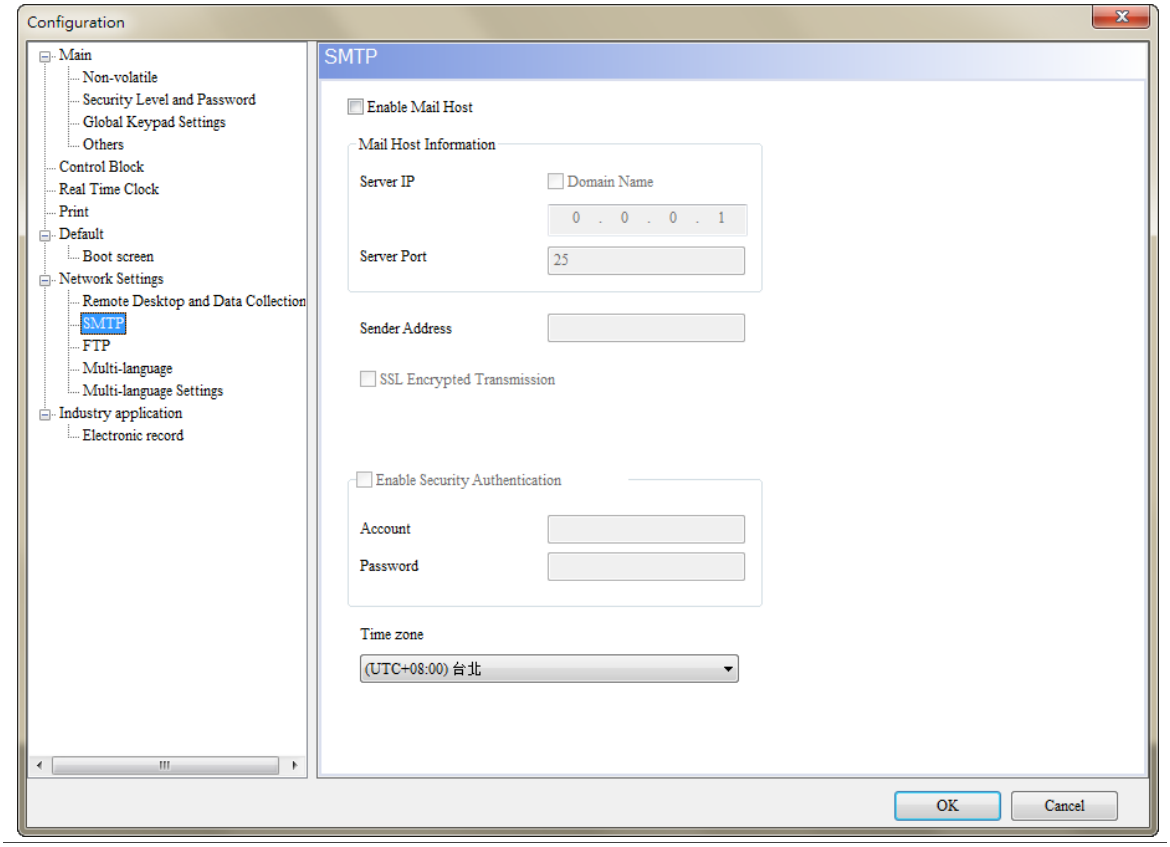


Enable real-time monitoring	Check [Enable real-time monitoring] to add and delete monitoring addresses.
Add monitoring address	Click to add a new monitoring address. NO | Name | Address | Data Format | Unit | Length | Integer Digits | Fractional Digits 1 | | None | Unsigned | Word | 2 | 4 | 0 You can name the input address with the maximum length of 30 characters. NO | Name | Address | Data Format | Unit | Length | Integer Digits | Fractional Digits 1 | 台達 | $100 | Unsigned | Word | 1 | 4 | 0 2 | Delta | {Link2}1@D10 | Unsigned | Word | 1 | 4 | 0
Delete monitoring address	Select the number of monitoring address for deletion, then click to delete it.
Import CSV content	After making changes to the exported CSV file content, click to import the monitoring address parameters.
Export CSV content	Export the monitoring address content as a CSV file. Real control.csv A | B | C | D | E | F | G 1 | Define Nar | Address | Memory Fc | Type | Read Coun | Integer | Fraction 2 | 台達 | $100 | Unsigned | Word | 1 | 5 | 0 3 | Delta | {Link2}1@ | Unsigned | Word | 1 | 5 | 0
Password	■ The default password is 12345678. ■ When you enter the connection address on the web page, it requires you to enter this password.
Items per Page	■ You can set the number of monitoring addresses to display on one page. ■ The default is 10 addresses (minimum is 1 address and maximum is 20 addresses).
Update Frequency (s)	■ The update frequency of the screen after the values are changed. ■ The default is 30 seconds (minimum is 1 second and maximum is 30 seconds).

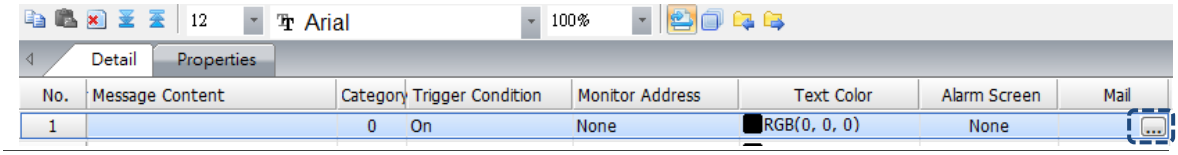
21. SMTP

Table 21.1 Configuration - SMTP

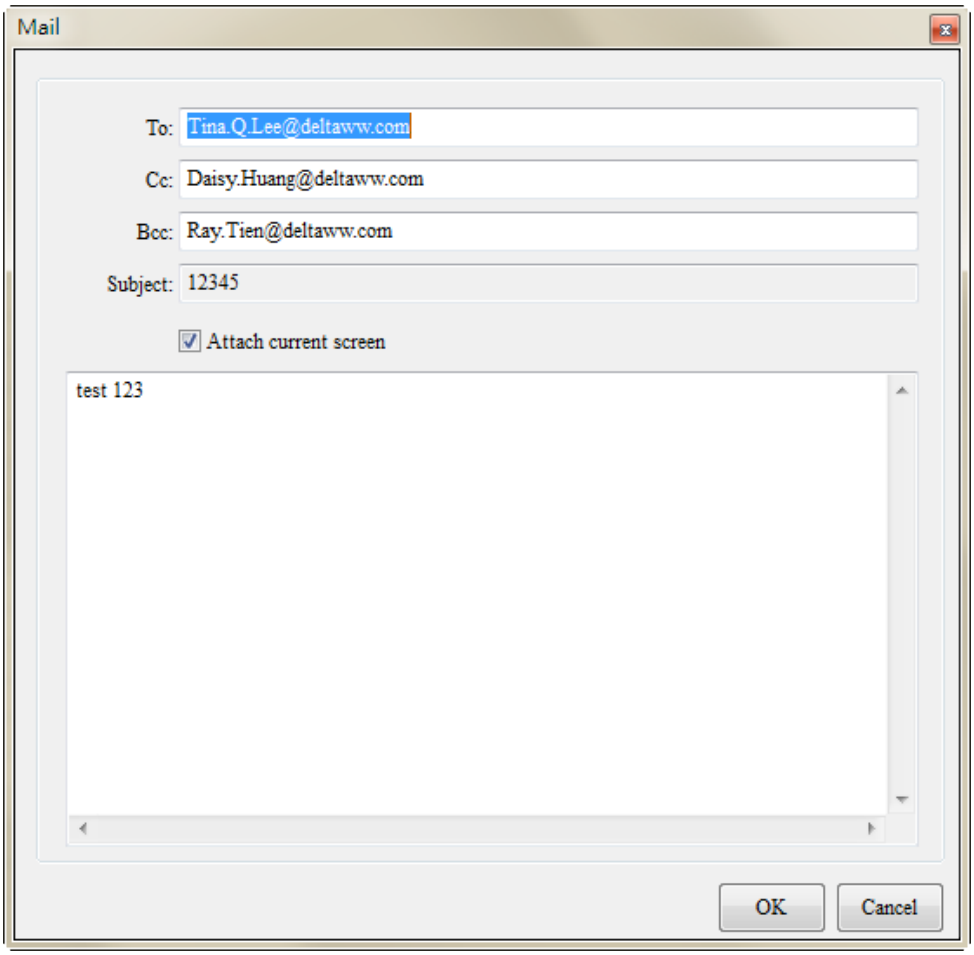
[Configuration] - [Network Settings]



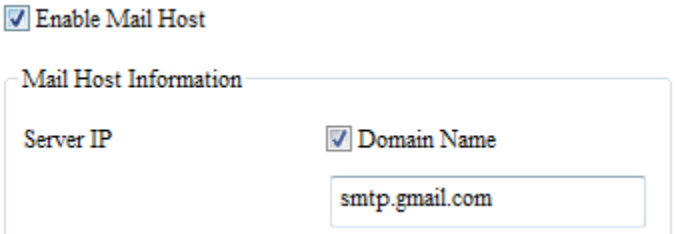
- SMTP is short for Simple Mail Transfer Protocol.
  This server is for sending messages. SMTP is a set of rules for sending mails from a source address to a destination address, and it controls how the message is transferred.
- DOPSoft provides the SMTP function to notify you with an email when an alarm occurs.
- After setting the SMTP parameters, you must also go to [Options] > [Alarm Settings] to fill in the recipient email and other alarm information in the [Mail] column.

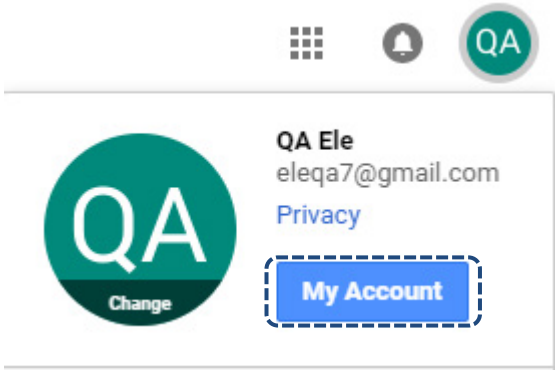
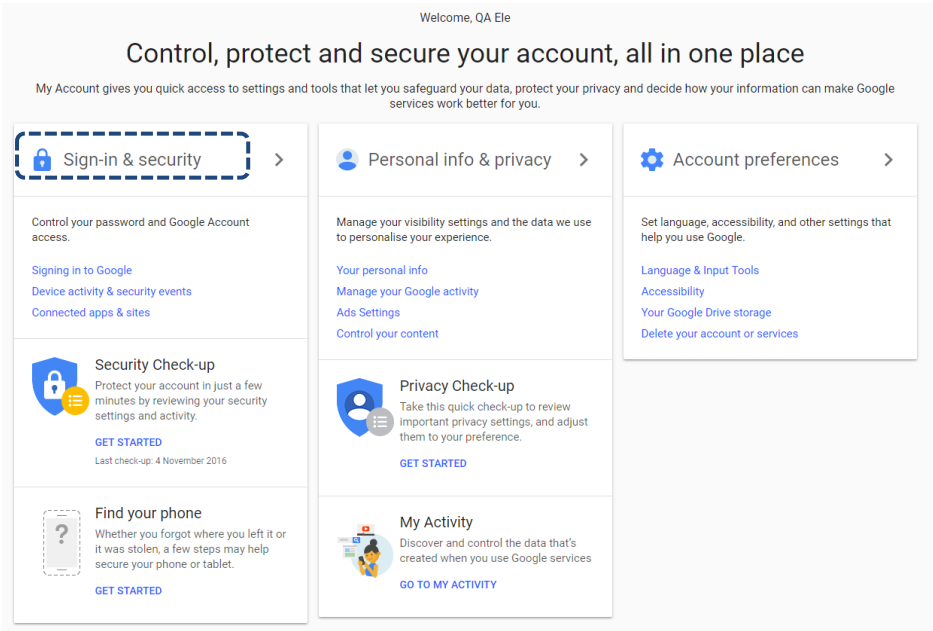
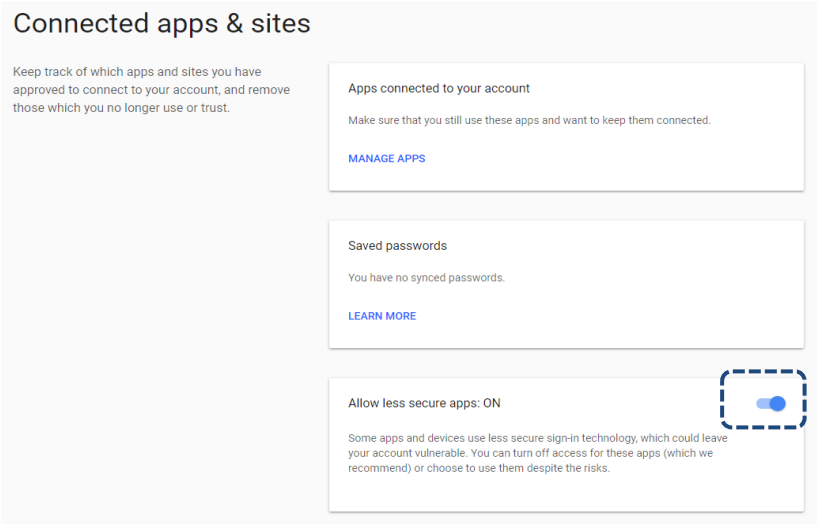


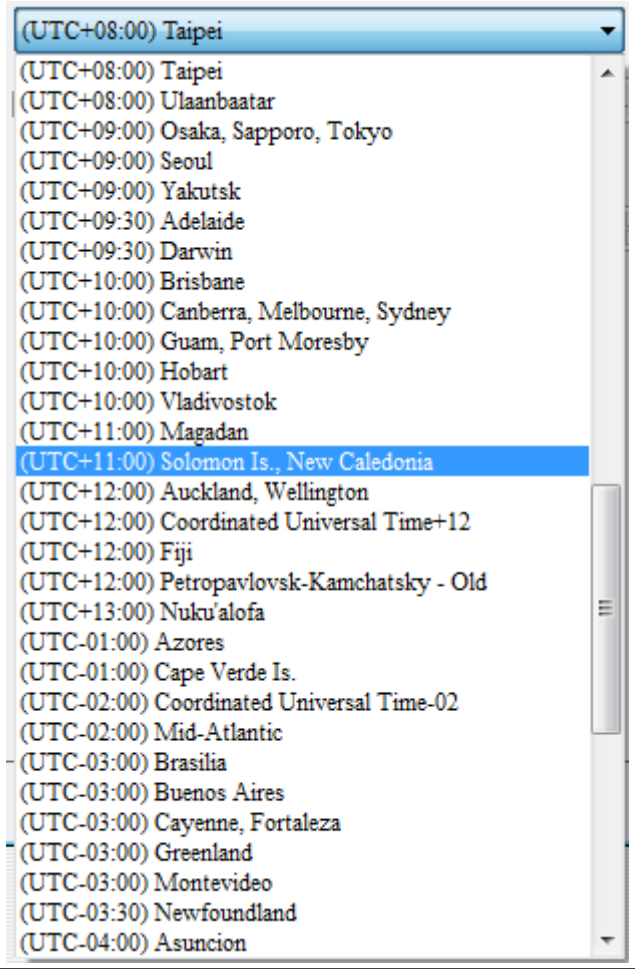
[Configuration] - [Network Settings]



To enable SMTP, please check [Enable Mail Host], then you can set the server IP address, server port, and security authentication of the account and password.

Server IP	■ This IP address is the Mail Server IP address created by the user. Before using the SMTP function, please set up the Mail Server first. ■ Other than entering the IP address, you can also check the [Domain Name] function to enter the domain name. 
Server Port	The default server port is 25 which is the general SMTP communication port.
Sender Address	Please fill in the sender's mail address.
SSL Encrypted Transmission	■ SSL is short for Secure Sockets Layer which provides secure transmission over the Internet. SSL was first proposed by Netscape with the goal of ensuring the confidentiality and integrity of the communication between two applications, as well as to verify the identity of the server. ■ To use SSL encryption, your e-mail must also support this feature. ■ Gmail itself also requires SSL encryption. To send a message using Gmail, you need to make the following settings.

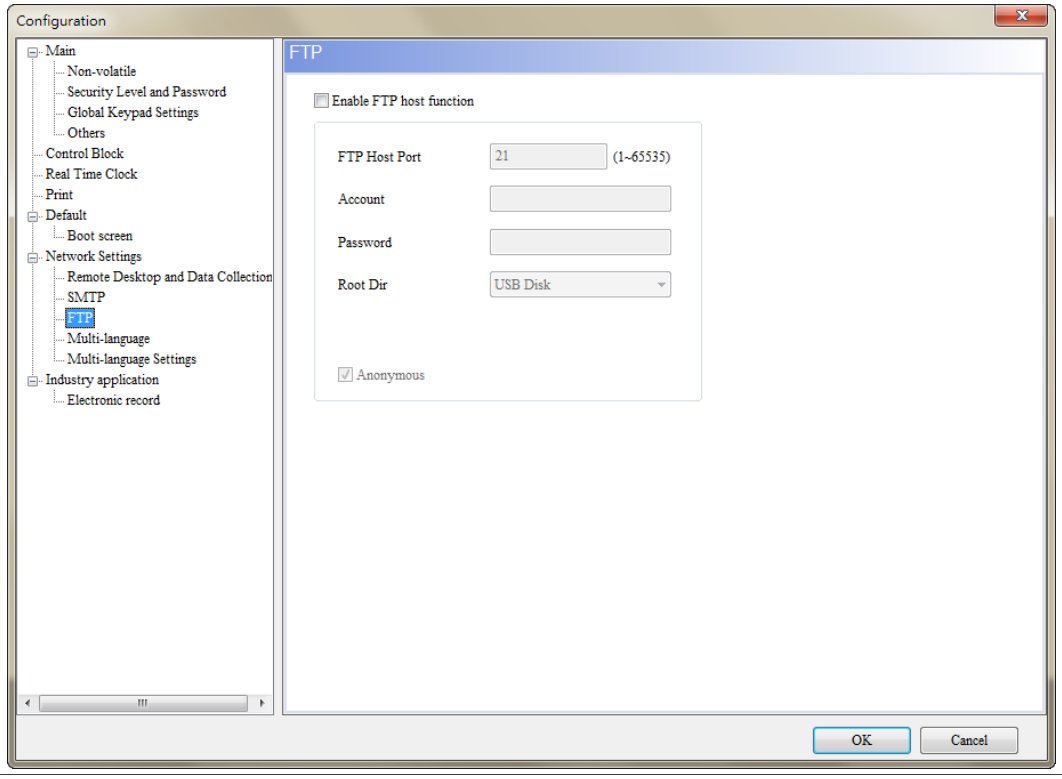
[Configuration] - [Network Settings]	
SSL Encrypted Transmission	1. Sign in to your Gmail account, then click [My Account].  2. Select [Sign-in & security].  3. Go to the bottom of the page and enable [Allow less secure apps].  ■ After completing the above steps, you can use Gmail to receive alarm messages.
Enable Security Authentication	■ Before enabling the security authentication function, you must check [Enable Mail Host] first to set the account and password. ■ If you have set the authentication of the account and password when setting up the SMTP server, you need to check this option.

[Configuration] - [Network Settings]	
Account	■ The account and password are based on the account and password required by the SMTP server. When you set up the SMTP Mail Server, you must first enter a set of account and password if you checked the [Enable Security Authentication] option. This set of account and password is used to check whether the recipient is a legitimate backend email user. This avoids unattended emails taking up spaces in the system and creating potential security issues. ■ Please note that the format of the account will be different because of the different formats required by each SMTP Mail Server. Please ask your MIS regarding the guidelines.
Password	
Time zone	The HMI provides a time zone feature that allows you to select the local time zone so that the HMI does not have time differences between places and the time it sends the alarm message is also more precise. 

22. FTP

Table 22.1 Configuration - FTP

[Configuration] - [Network Settings]



The FTP Server function allows you to download the alarms, history data, recipes, and operation logs saved in the USB Disk or SD Card through the Internet to read on the PC; you can also upload the files in the PC to the USB Disk or SD Card.

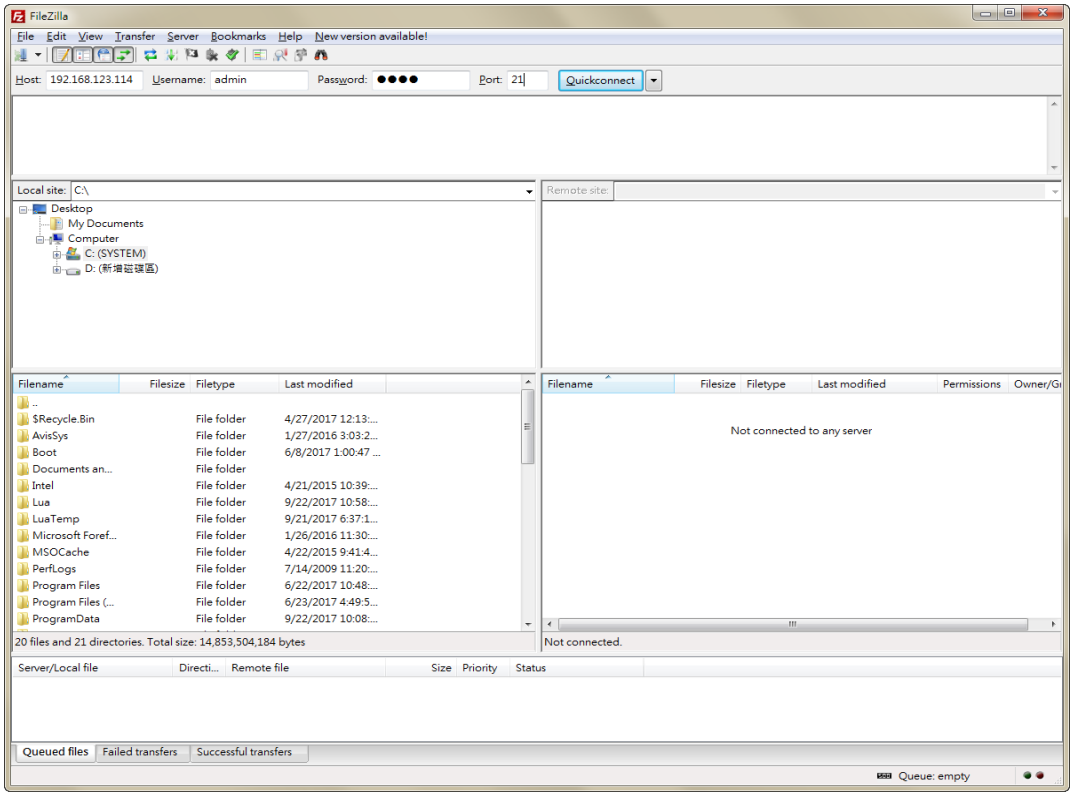
FTP rules	Description	
Supported HMI	Net-based HMI	
Supported connections	File transfer software	
	Windows Explorer	
	DOS Command Line	
Connection limit	Allows 3 FTP clients to connect at the same time	
	Automatically disconnects when the idle time is over 90 seconds	
Login method	Anonymous login	Unable to add directories
		Unable to upload files
		Unable to download files
		Unable to delete files
		Can change file names
	Account login	Can add directories
		Can upload files
		Can download files
		Can delete files
		Can change file names

[Configuration] - [Network Settings]	
FTP rules	Description
File transfer rules	Unlimited traffic
	Supports resume download
	Unlimited transfer file size
	Maximum file name length is 260 bytes
	Can change file names
	Supports Chinese file names
	Encryption is not supported
	Supports active mode / passive mode connection
	When the FTP is transferring files, you can access the system directory

■ The FTP supports three connection methods. Please refer to the following for more information.

1. File transfer software

You need to use an FTP client software to upload or download files from the FTP Server provided by the HMI, or use the Windows Explorer or DOS Command line to connect to the FTP Server. The file transfer software in this example is FileZilla. This is a free software which you can download from: https://filezilla-project.org/download.php. Open FileZilla after installation.

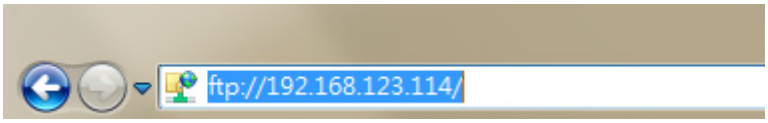


Name	Description
Host	Enter the HMI IP address. This example is 192.168.123.114.
Username	Enter the same username as the software setting, which is admin.
Password	Enter the same password as the software setting, which is 1234.
Port	Enter the same port as the software setting, which is 21.
Quickconnect	Before executing this button, please make sure the above four settings are filled in.

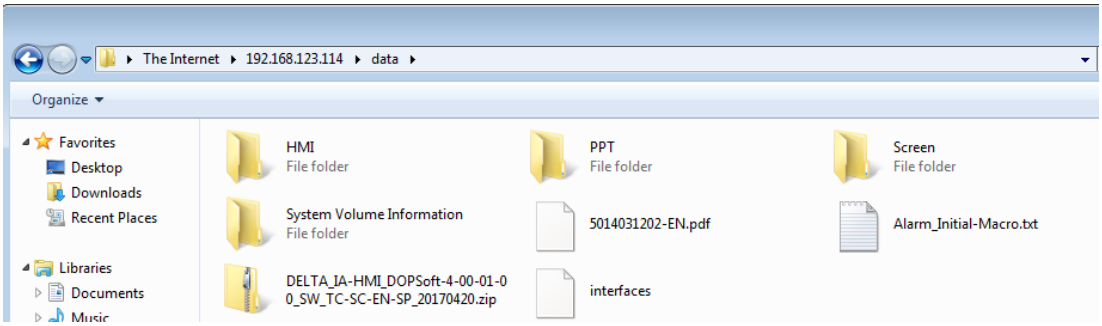
[Configuration] - [Network Settings]

2. Windows Explorer

Open Windows Explorer, enter ftp://192.168.123.114/, then enter the account and password to log in to the FTP.

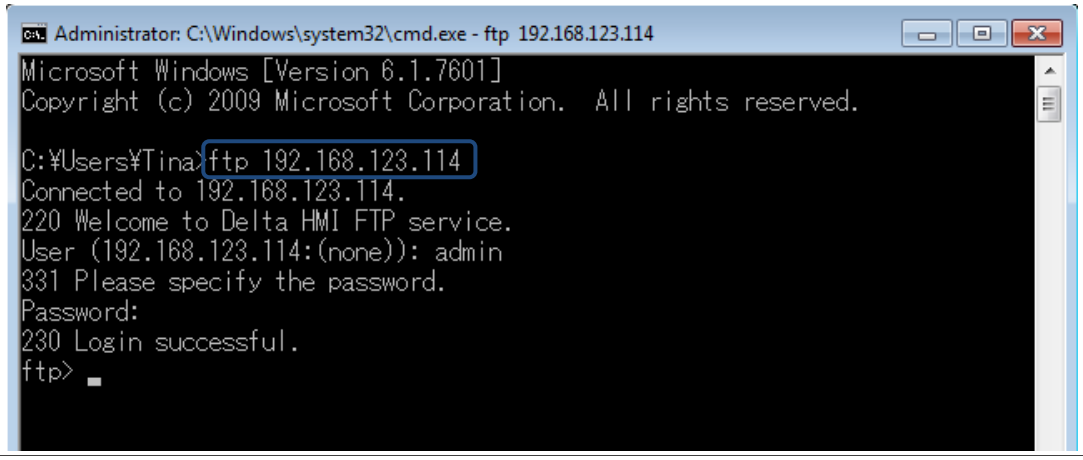


Once you are logged in, you can see all the files in the USB Disk.



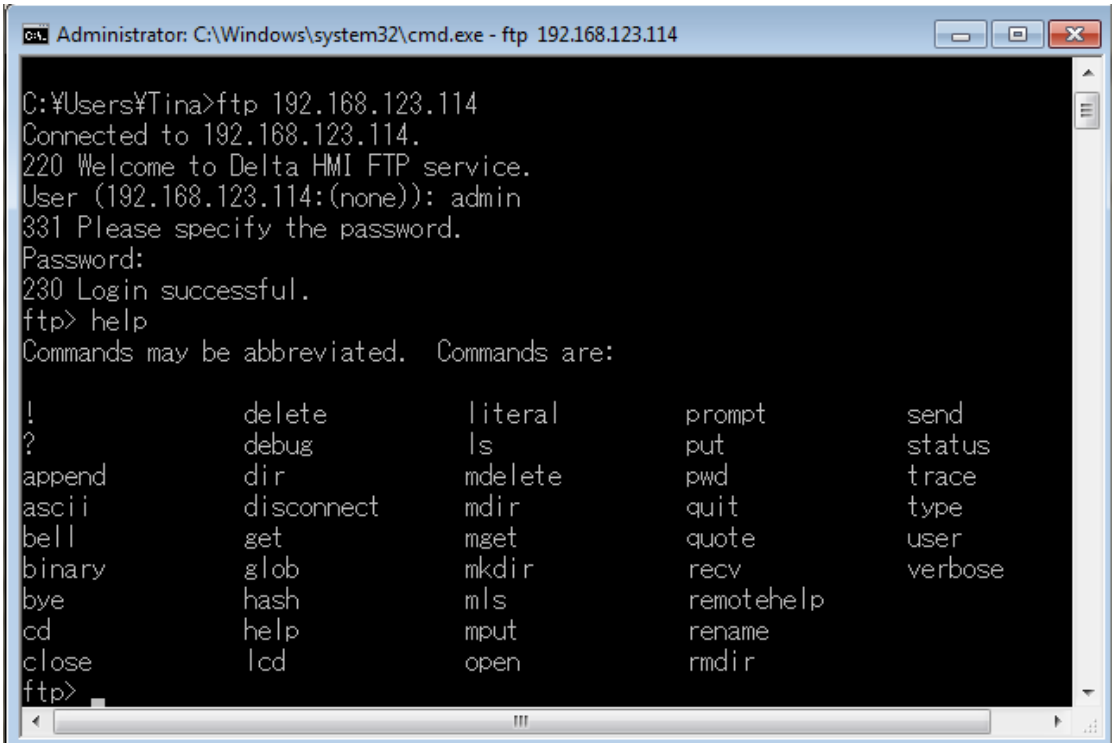
3. DOS Command Line

Enter ftp 192.168.123.114 in the command prompt, then enter the account (admin) and password (1234) to connect to the FTP.

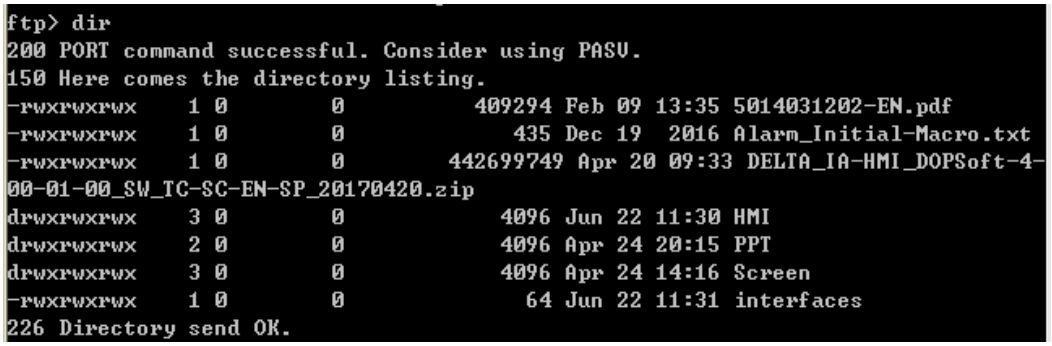


[Configuration] - [Network Settings]

In the ftp command, you can enter “help” to see the supported commands.



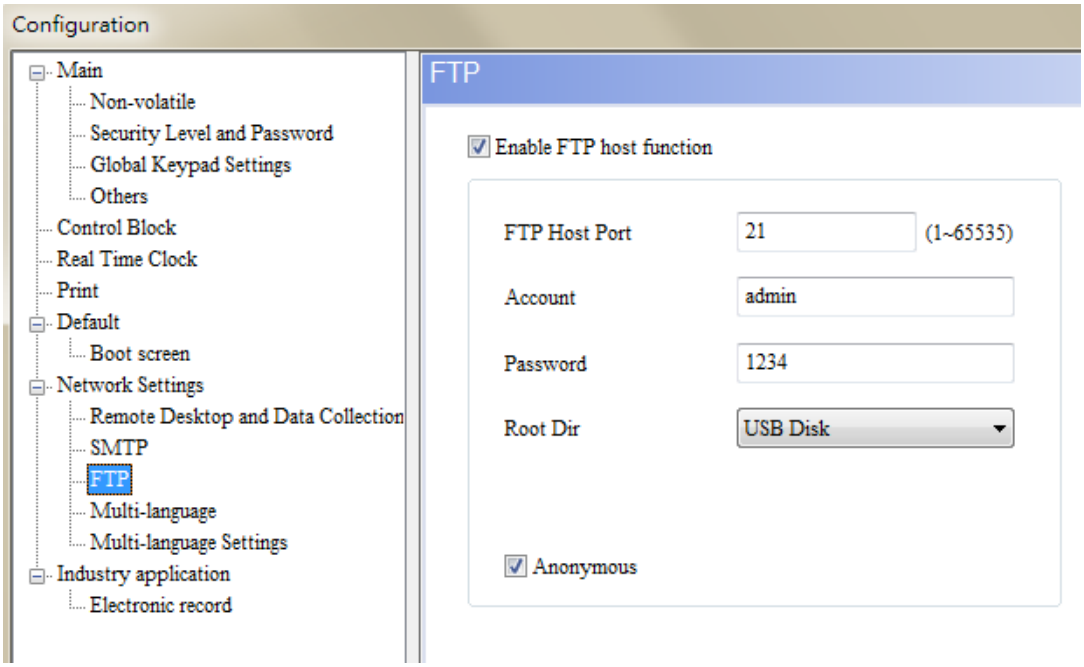
Enter “dir” command to see the list of all the files currently in the USB Disk.



If you want to download files from the USB Disk or SD Card, enter “get” command. If you want to upload files to the USB Disk or SD Card from the PC, enter “put” command.

[Configuration] - [Network Settings]

The following introduces the property settings for the software interface.



Enable FTP host function	Check this option to use the FTP function.
FTP Host Port	The FTP Host Port default is 21.
Account	You can enter the account name you want to use.
Password	You can enter the password you want to use.
Root Dir	The root directory is the location where the HMI files are stored. The default is USB Disk. You can also select SD Card as the storage location.
Anonymous	■ If you check this option, you can access the FTP without logging in with an account. ■ If you access the FTP anonymously, you cannot upload / download files, delete files, or add directories.

23. Multi-Lang input character count calculation

This feature allows the user to know the exact total bytes of the input characters. The number of bytes for different languages varies, so errors may occur when calculating the length. This tool can let you calculate the correct number of bytes for Unicode characters.

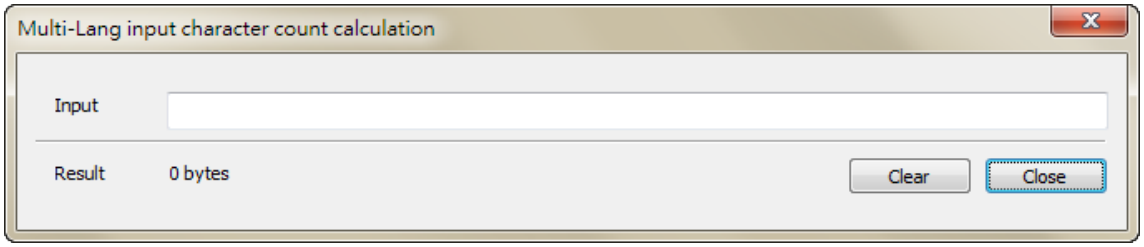


Figure 23.1 Multi-Lang input character count calculation tool

The following examples are the calculations of the byte numbers for the three languages.

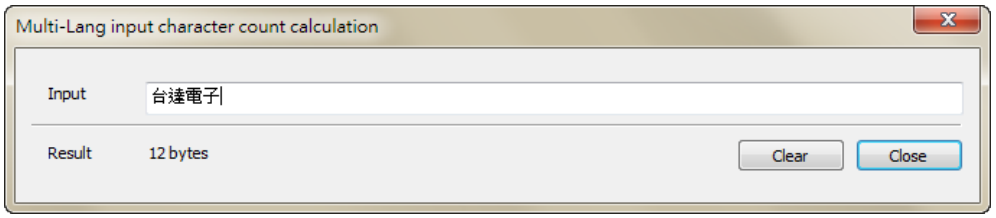
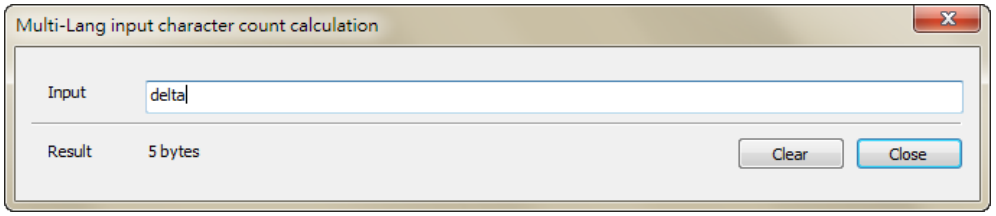
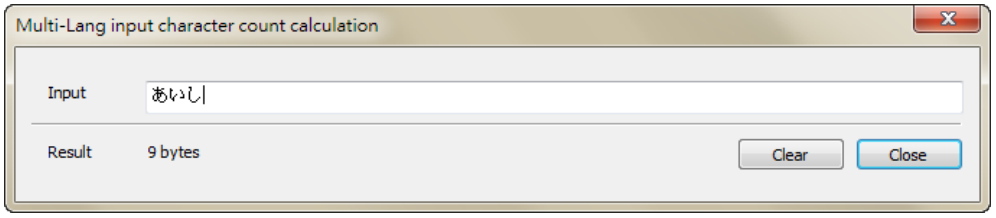
Traditional Chinese	
English	
Japanese	

Table 23.1 Multi-Lang input character count calculation result